STATE OF CALIFORNIA
The Resources Agency

Department of Water Resources

BULLETIN No. 177-71

WATERMASTER SERVICE IN NORTHERN CALIFORNIA

1971 SEASON

DECEMBER 1972

NORMAN B. LIVERMORE, JR.
Secretary for Resources
The Resources Agency

RONALD REAGAN
Governor
State of California

WILLIAM R. GIANELLI
Director
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FOREWORD

Bulletin No. 177-71 discusses the watermaster service provided by the Department of Water Resources to areas in Northern California during the 1971 watermaster season. Authority to prepare this report is described in the California Water Code, Division 2, Part 4, Chapter 7.

The bulletin is presented in two parts. The first part contains general information about water rights, water supply, service areas, and watermaster duties. The second part contains the specifics of the 1971 watermaster season, including streamflow in the various service areas, methods of distribution, and other significant information pertinent to 1971 watermaster activities.

William R. Gianelli

William R. Gianelli, Director
Department of Water Resources
The Resources Agency
State of California
December 29, 1972

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

RONALD REAGAN, Governor
NORMAN B. LIVERMORE, JR., Secretary for Resources
WILLIAM R. GIANELLI, Director, Department of Water Resources

This report was prepared by the
Northern District
under the direction of

Albert J. Dolcini . . . . District Engineer
Wayne S. Gentry . . . . Chief, Operations Branch

by

C. Wesley York . . . . Chief, Watermaster Section
Kenneth E. Morgan . . . . Assistant Supervising Watermaster

assisted by

Ross P. Rogers . . . . Watermaster
Virgil D. Buechler . . . . Deputy Watermaster
Charles H. Holmes . . . . Deputy Watermaster
Lester L. Lighthall . . . . Deputy Watermaster
Alden B. Moore . . . . Deputy Watermaster
John A. Nolan . . . . Deputy Watermaster

Report data and text on the Indian Creek and Middle Fork Feather
River Watermaster Service Areas were furnished by the
Central District
by

H. J. Nessler . . . . Supervising Watermaster
Harvey A. Jorgenson . . . . Watermaster
Conrad Lahr . . . . Deputy Watermaster

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Watermaster Service Areas in Northern California

INTRODUCTION

Purpose and Benefits

The primary purpose of watermaster service is to distribute water in accordance with established water rights. This is accomplished by apportioning available supplies in streams which have had water right determinations.

Distribution of water in watermaster service areas is a continuing statutory function of the Department of Water Resources as provided in Part 4 of Division 2 of the California Water Code.

A major benefit of watermaster service to water users and the State is that court litigation and physical violence, which in past years occurred quite frequently, are essentially eliminated.

Under watermaster service each water right owner is assured that his rights are being protected without his having to take legal action against other users. Another important benefit results from increased use of available supplies through reduction of waste.

Because both the water right owners and the State receive benefits from watermaster service, the costs of performing the service are shared. The State general tax fund pays for one-half the cost of operating each service area. The water right owners in the service area pay the other one-half.

Determination of Water Rights

Almost all of the streams under state watermaster service have had their water rights defined by the courts under one of three adjudication procedures. These adjudications (decrees) establish each owner's rights as to allowable rate of diversion, season of use, point of diversion, and place of use. They also establish priorities whereby each owner's rights are shown in relation to the rights of all other decreed owners. Under this system all rights of any one priority must be fully satisfied before water can be diverted under any lower priority rights.

Water rights determinations necessary for establishing watermaster service areas may be accomplished by "statutory adjudication", "court adjudication", "court reference", permit or license to appropriate, or agreement.

Statutory Adjudications

The California Water Code (Sections 2500-2900) contains procedures whereby water users on any stream may petition the State Water Resources Control Board, Division of Water Rights, to make a legal determination of water rights on that stream. If the Board finds that such a determination is in the public interest, it proceeds with a statutory adjudication. This adjudication ultimately results in a court decree which defines all water rights on the stream.

Court Adjudications

A less extensive method of defining water rights involves a "court adjudication" procedure. This type of adjudication results when two or more parties involved in a water rights dispute seek a solution to their problem under civil law. A decision handed down in such a civil action determines only the water rights of those parties named in the action and therefore does not necessarily define all water rights on the stream. As a result, serious conflicts sometimes arise between decreed water right owners and persons claiming riparian or

appropriative rights which were not specified in the decree.

Court Reference

The "court reference" type of adjudication arises when a civil action as discussed above is referred to the State Water Resources Control Board for a determination under authority contained in Sections 2000-2076 of the Water Code. The Board's report becomes the basis of the court's decision. As in court adjudications, a court reference determines only the water rights of the parties named in the action.

Watermaster Service Areas

Formation

Watermaster service is provided in areas where the rights have been defined by the superior court or by agreement and where an unbiased qualified person is needed to properly apportion the available water according to the established rights. The Director of Water Resources creates watermaster service areas where these conditions exist, following either a request by the users or an order by the superior court.

The first watermaster service areas were created in September 1929, while the most recent addition was made in November 1968. Prior to 1929, some watermaster service was provided in accordance with the Water Commission Act of 1913. There are now about 50 streams in Northern California which are under state watermaster service.

Facts about the 18 service areas in Northern California, including their stream systems, counties, decrees and dates of creation, are presented in Table 1. Sixteen of these service areas are in the Northern District, and two are in the Central District.

Description of Region

The service areas are primarily in the mountainous northeastern part of the State where the growing season varies between about 100 and 140 days. Meadow hay and alfalfa are the principal crops under irrigation, although a considerable amount of land is used exclusively for pasturing livestock. Most irrigation is accomplished by gravity systems, with water users diverting directly from the streams at one or more diversion points. However, pumped diversions and sprinkler irrigation systems are becoming popular in some areas.

A map of this region showing the 18 service areas is presented in Figure 1.

Watermaster Responsibilities

Authority

To assure the proper distribution of water within his service area, each watermaster must ascertain the amount of water available and distribute it both by amount and priority in accordance with established water rights. To accomplish his purposes, the watermaster is provided authority both by the Water Code and by provisions of pertinent court decrees or voluntary agreements to physically regulate the various streams in the service area. He is further authorized to supervise the design, construction, operation, and maintenance of diversion dams, headgates, and measuring devices.

Each watermaster supervises water distribution at approximately 100 to 200 diversions in one or more service areas. The frequency of visiting these diversion points increases substantially in years of short water supply.

Control Devices

Permanent measurement and control devices, which the State requires (Water Code Sections 4100-4104) at each owner's

main point of diversion, are constructed by the water users under supervision of the watermaster. Installation of accurate, easily set, and lockable structures is a continuing objective of watermaster service, since once they are built, conflicts among water users almost always stop. Also, the watermaster's ability to visit and set each diversion on a regular basis is greatly facilitated by good structures.

Interpretation of Decrees

The watermaster is often called upon to make immediate field or on-the-spot interpretations of various court decrees, agreements, etc. Since most of these documents were written more than 30 years ago, many situations have developed that were not initially considered. Therefore, the watermaster must use sound, careful, and practical judgment in attempting to reach workable solutions to water disputes. To accomplish this he must possess a good understanding of California water law.

Water Supply

Water supply in the watermaster service areas is derived principally from unregulated runoff of small streams. Peak runoff, mostly snowmelt, occurs in the spring, with relatively small streamflow occurring in the summer and early fall. Additional supplies from storage reservoirs and ground water pumping are used in some areas to supplement natural streamflow.

In some service areas the water supply must be predicted in advance to determine the date watermastering will begin and, to some extent, the manpower needed. The Department's Bulletin No. 120 series, "Water Conditions in California", is used to assist in these predictions.

Precipitation

The streamflow available for distribution is affected by total precipitation, amount of snowpack, air temperature, and the amount of rainfall received during the irrigation season. The latter is particularly important in the Upper Pit River-Surprise Valley areas, where about 25 to 30 percent of the annual precipitation occurs normally in April, May, and June. Spring storms, which are normally accompanied by relatively cool temperatures, materially affect both the supply and the demand for water. Temperatures in the spring affect the demand for water and the manner in which snowmelt runoff occurs. A hot, dry spring depletes the water supply very early, even in years of normal snowpack. A cold, wet spring can extend the supply well into the irrigation season, but cold temperatures retard the growth of crops and are not necessarily desirable.

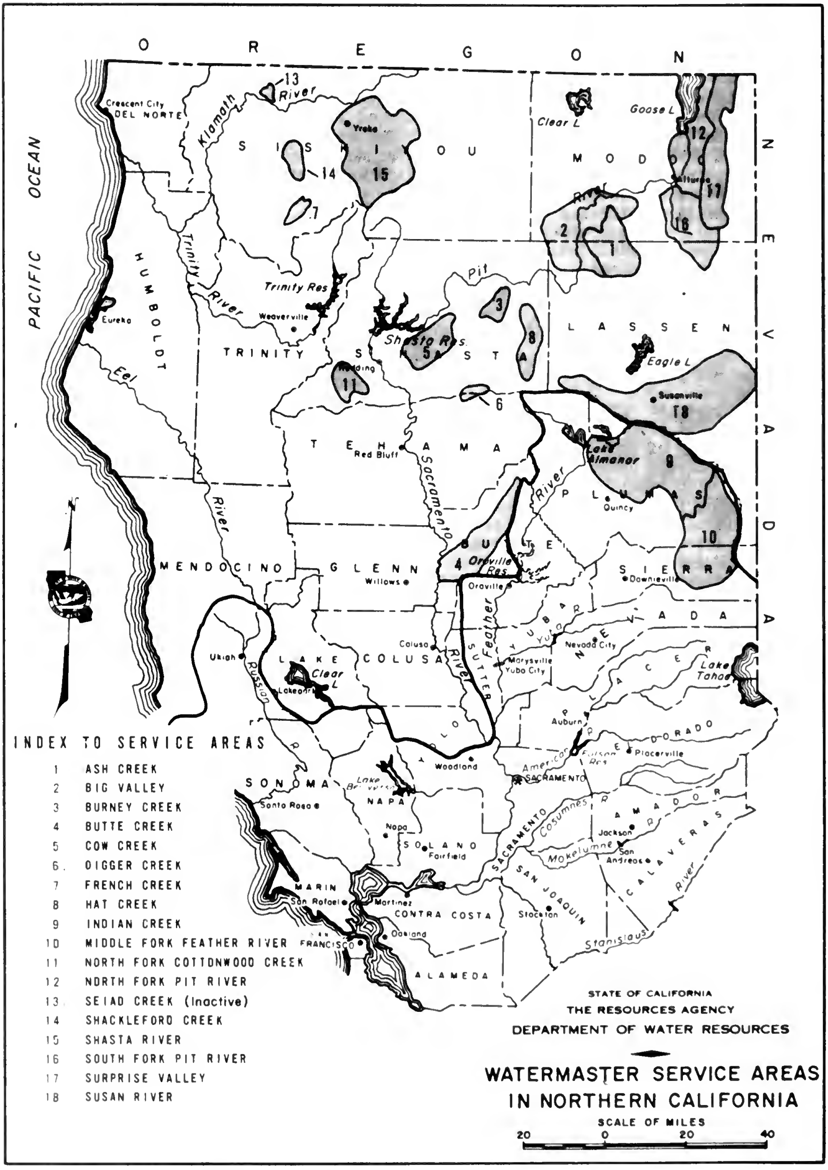
Data collected at representative snow courses showing the snowpack as of April 1, 1971, on all courses and the snowpack on May 1 and June 1 at selected courses is presented in Table 2. This information was obtain from the Department's Bulletin No. 120-71.

Table 3 reports the quantity of precipitation at selected stations in the service areas during the 1970-71 water year. The seasonal precipitation gives an indication of the related water supply available for distribution and provides a basis for comparing the current year's supply with a long-term average.

Streamflow

The general water supply available for diversion within each watermaster area is determined from stream gaging stations placed at key locations in the main stream channels. Several major stations are installed and maintained by the United States Geological Survey

FIGURE 1



OREGON
NEVADA
PACIFIC OCEAN
DEL NORTE
SISKIYOU
MODOC
HUMBOLDT
TRINITY
SHASTA
LASSEN
TEHAMA
PLUMAS
MENDOCINO
GLENN
BUTTE
SIERRA
NEVADA
LAKE
COLUSA
SUTTER
YUBA
PLACER
YOLO
SONOMA
NAPA
EL DORADO
AMADOR
SOLANO
SACRAMENTO
MARIN
CONTRA COSTA
SAN JOAQUIN
CALAVERAS
ALAMEDA
Crescent City
Yreka
Eureka
Weaverville
Redding
Red Bluff
Susanville
Alturas
Quincy
Downieville
Willows
Oroville
Colusa
Marysville
Yuba City
Nevada City
Ukiah
Lakeport
Auburn
Placerville
Woodland
Sacramento
Santa Rosa
Napa
Fairfield
Jackson
San Andreas
San Rafael
Martinez
Oakland
San Francisco
Stockton
Klamath River
Trinity River
Eel River
Trinity Res
Shasta Res.
Pit River
Sacramento River
Feather River
Oroville Res
Russian River
Clear L
Goose L
Eagle L
Lake Almanor
Lake Tahoe
Lake Berryessa
Yuba R
American R
Folsom Res
Cosumnes R
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9 INDIAN CREEK
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13 SEIAD CREEK (Inactive)
14 SHACKLEFORD CREEK
15 SHASTA RIVER
16 SOUTH FORK PIT RIVER
17 SURPRISE VALLEY
18 SUSAN RIVER
STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATERMASTER SERVICE AREAS IN NORTHERN CALIFORNIA
SCALE OF MILES
20 0 20 40

TABLE 1

SUPERIOR COURT DECREES REGULATING WATER DISTRIBUTION

Watermaster Service Area	Name of Stream System	County	Decree Number	Decree Date	Decree Type*	Date Watermaster Service Area Created	Remarks
Ash Creek	Ash Creek	Modoc ** and Lassen	3670	10-27-47	CR	4-03-59	Included as part of Big Valley service service area 1949 through 1958.
Big Valley	Pit River	Modoc ** and Lassen	8395	2-17-59	S	11-13-34	Service provided in accordance with recorded agreement in 1934. Service area operated under recorded agreement 1935 through 1958, and under decree since 1959.
Burney Creek	Burney Creek	Shasta	5111	1-30-26	CR	9-11-29	Service provided in accordance with decree since 1926.
Butte Creek	Butte Creek	Butte	18817	11-06-42	S	1-07-43	
Cow Creek	North Cow Creek	Shasta	5804	4-29-32	CR	10-17-32	
	Oak Run Creek	Shasta	5701	7-22-32	CR	10-17-32	
	Clover Creek	Shasta	6904	10-04-37	CR	1-21-38	Included in Cow Creek service area.
Digger Creek	Digger Creek	Shasta and Tehama **	2213	8-12-99	C	6-11-64	
			3214	5-27-13	C		
			3327	10-16-17	C		
			4570	2-24-27	C		
French Creek	French Creek	Siskiyou	14476	7-01-58	CR	11-19-68	
Hat Creek	Hat Creek	Shasta	5724	5-14-24	CR	9-11-29	Service provided in accordance with decree since 1924.
			7858	10-07-35	CR		
Indian Creek	Indian Creek	Plumas	4185	5-19-50	S	2-19-51	
Middle Fork Feather River	Middle Fork Feather River	Plumas ** and Sierra	3095	1-22-40	S	3-29-40	
North Fork Cottonwood Creek	North Fork Cottonwood Creek	Shasta	5479	6-09-20	CR	9-11-29	Service provided intermittently in accordance with the decree since 1924.
North Fork Pit River	North Fork Pit River and all tributaries except Franklin Creek	Modoc	4074	12-14-39	S	12-18-39	All stream systems consolidated into North Fork Pit River service area 12-13-40.
	New Pine Creek	Modoc	2821	6-14-32	CR	6-22-32	
	Davis Creek	Modoc	2782	6-30-32	CR	7-13-32	
	Franklin Creek	Modoc	3118	9-08-33	CR	9-14-33	
	Cottonwood Creek	Modoc	2344	5-03-40	CR	12-13-40	
Seiad Creek	Seiad Creek	Siskiyou	13774	4-10-50	S	11-06-50	Service provided in accordance with decree by order of the court in 1950. Service suspended since September 1964.
Shackleford Creek	Shackleford Creek	Siskiyou	13775	4-10-50	S	11-08-50	Service provided in accordance with decree by order of the court in 1950.
Shasta River	Shasta River	Siskiyou	7035	12-29-32	S	3-01-33	
South Fork Pit River	South Fork Pit River	Modoc ** and Lassen	3273	10-30-34	CR	12-31-34	Service includes operation of West Valley Reservoir (built subsequent to issuance of decree) in accordance with the demands of South Fork Irrigation District.
	Pine Creek	Modoc	Agreement	11-22-33		1-12-35	
Surprise Valley	Cedar Creek	Modoc	1208	5-22-01	C	9-11-29	All adjudicated stream systems in Surprise Valley were consolidated into the Surprise Valley service area on 1-10-39. Bidwell Creek was added on March 16, 1960. Service started on Cedar Creek in 1926 in accordance with the decree. Service was provided on Soldier and Owl Creeks in 1929 in accordance with the decrees by order of the court.
			2343	2-15-23	C		
	Soldier Creek	Modoc	2405	11-28-28	CR	9-11-29	
	Owl Creek	Modoc	2410	4-29-29	CR	9-11-29	
	Emerson Creek	Modoc	2840	3-25-30	CR	4-02-03	
	Mill Creek	Modoc	3024	12-19-31	CR	12-30-31	
	Deep Creek	Modoc	3101	1-25-34	CR	12-29-34	
	Pine Creek	Modoc	3391	12-07-36	CR	1-13-37	
	Rader Creek	Modoc	3626	8-04-37	CR	6-12-37	
	Eagle Creek	Modoc	2304	4-05-26	C	1-10-39	
			3284	11-05-37	CR		
	Bidwell Creek	Modoc	6420	1-13-60	S	3-16-60	
Susan River	Susan River	Lassen	4573	4-16-40	CR	11-10-41	
	Baxter Creek	Lassen	8174	12-15-55	S	2-16-56	
	Parker Creek	Lassen	8175	12-15-55	S	2-16-56	

* Explanation of type of Decree:

C Court adjudication (court makes determination from evidence submitted - no report of referee).

CR Court adjudication (referred to State Water Resources Control Board for investigation and report).

S Statutory adjudication (State Water Resources Control Board is petitioned by water users to make a determination of all water rights on a stream system).

** Decree entered by the Superior Court of this county.

as part of a Federal-State program for collection of year-round streamflow records. In addition, several stream gaging stations are installed and operated by the watermaster during the irrigation season to provide supplemental information. Also, water stage recorders are often installed by the watermaster in selected diversion ditches to further assist him in proper distribution of the various water right allotments.

Table 4 presents runoff data at selected stream gaging stations in or near the service areas.

TABLE 2

SNOWPACK AS OF APRIL 1 AND MAY 1, 1971 AT REPRESENTATIVE SNOW COURSES

Watermaster Service Areas (Grouped Geographically)*	Snow Courses* Relating to Each Group	Elevation (in feet)	WATER CONTENT OF SNOW: April 1 Average (in inches)	April 1, 1971: In Inches	April 1, 1971: In Percent of April 1 Average	May 1, 1971**: In Inches	May 1, 1971**: In Percent of April 1 Average
French Creek	Parks Creek	6,700	35.0	48.2	138		
Shackleford Creek	Middle Boulder No. 1	6,600	30.0	30.3	101	30.4	102
Shasta River	Little Shasta	6,200	20.0	26.2	131		
Ash Creek Big Valley North Fork Pit River South Fork Pit River Surprise Valley	Blue Lake Ranch	7,300	10.0	11.0	110		
	Eagle Peak	7,200	15.0	16.4	109		
	Cedar Pass	7,100	16.0	21.2	132	20.4	128
	Adin Mountain	6,350	13.0	18.1	139	12.0	92
Burney Creek Cow Creek Digger Creek Hat Creek	Thousand Lakes	6,500	36.0	50.7	141	45.6	127
	New Manzanita Lake	5,800	7.0	7.8	111	0.0	0
	Burney Springs	4,700	2.0	5.2	260 -		
Butte Creek	Humbug Summit	4,850	11.0	15.0	137		
Susan River	Silver Lake Meadows	6,450	28.0	38.6	138	37.5	134
	Fredonyer Pass No. 1	5,750	6.0	5.3	88		
Indian Creek Middle Fork Feather River	Independence Lake	8,450	41.0	56.4	138		
	Mount Deyer No. 1	7,100	24.0	32.2	134	32.4	135
	Rowland Creek	6,700	17.0	24.6	145	24.0	141
	Yuba Pass	6,700	30.0	42.6	142	34.8	116

* Snow courses are listed in order of elevation within each geographical group of watermaster service areas.

** Data collected only at stations listed.

TABLE 3

PRECIPITATION AT SELECTED STATIONS - 1970-71 SEASON

Station Name	County	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Percent Of Mean
Fort Jones Ranger Station	Siskiyou	1.78 / 1.59	8.15 / 2.77	8.92 / 4.02	4.01 / 4.08	0.29 / 3.14	5.21 / 2.21	0.98 / 0.98	1.49 / 1.11	0.12 / 0.81	0.08 / 0.35	0.38 / 0.34	0.89 / 0.40	32.07 / 21.78	147
Happy Camp Ranger Station	Siskiyou	2.88 / 4.07	16.49 / 7.25	17.75 / 10.41	12.27 / 11.31	2.95 / 8.24	12.12 / 8.45	3.33 / 2.72	1.11 / 2.16	0.88 / 1.08	0.20 / 0.38	0.28 / 0.17	2.21 / 0.74	72.58 / 54.88	132
Yreka	Siskiyou	1.72 / 1.45	8.87 / 2.00	5.22 / 3.30	2.51 / 3.19	0.52 / 2.29	4.19 / 1.61	1.21 / 0.82	2.18 / 1.03	0.85 / 0.88	0.04 / 0.27	0.28 / 0.39	0.48 / 0.45	25.78 / 17.78	145
Chico Experimental Station	Butte	1.72 / 1.48	7.20 / 2.41	5.54 / 5.12	2.72 / 5.03	0.08 / 4.43	3.32 / 3.28	0.38 / 2.31	0.82 / 1.18	0.33 / 0.44	0.00 / 0.01	0.03 / 0.01	0.38 / 0.33	22.83 / 28.08	87
Redding Fire Station No. 2	Shasta	2.80 / 2.27	17.32 / 3.78	9.87 / 7.28	5.18 / 7.69	0.41 / 8.18	7.61 / 4.90	0.85 / 2.95	2.33 / 1.74	1.98 / 1.31	0.02 / 0.11	0.13 / 0.13	1.41 / 0.81	49.71 / 38.92	128
Hat Creek Power House No. 1	Shasta	1.23 / 1.30	4.88 / 1.83	5.21 / 2.93	2.17 / 2.85	0.42 / 2.84	4.53 / 2.02	1.08 / 1.35	3.18 / 1.28	2.80 / 0.77	0.07 / 0.28	0.03 / 0.18	1.47 / 0.47	28.87 / 18.08	149
Lookout 3WSW	Lassen	1.80 / 1.97	8.87 / 3.54	4.57 / 5.31	2.51 / 8.25	0.40 / 1.21	5.99 / 1.90	1.05 / 1.73	2.83 / 1.19	2.55 / 1.85	0.11 / 0.11	0.10 / 0.48	2.74 / 0.47	31.12 / 28.09	119
Lakeview, Oregon	Lake	0.97 / 1.21	4.59 / 1.37	2.53 / 1.88	1.48 / 1.84	0.59 / 1.71	3.84 / 1.52	1.83 / 1.15	4.12 / 1.51	1.85 / 1.28	0.21 / 0.22	0.09 / 0.17	1.98 / 0.58	23.88 / 14.44	165
Alturas Ranger Station	Modoc	0.65 / 1.07	3.18 / 1.35	3.33 / 1.83	0.27 / 1.62	0.20 / 1.45	3.34 / 1.37	0.92 / 1.03	2.99 / 1.31	1.58 / 1.03	0.42 / 0.31	0.03 / 0.22	1.70 / 0.43	18.59 / 12.82	145
Jess Valley	Modoc	1.48 / 1.31	4.23 / 1.66	2.49 / 1.92	0.47 / 1.89	1.31 / 1.95	2.47 / 1.88	2.04 / 1.64	5.09 / 2.02	3.17 / 1.82	0.11 / 0.41	0.32 / 0.28	2.71 / 0.88	25.87 / 17.22	150
Cedarville	Modoc	1.53 / 1.17	4.23 / 1.41	2.53 / 1.69	0.91 / 1.84	0.81 / 1.50	3.74 / 1.45	1.04 / 0.99	3.99 / 1.04	1.13 / 0.94	0.23 / 0.33	8.24 / 0.15	2.58 / 0.37	22.98 / 12.88	178
Susanville Airport	Lassen	0.30 / 0.92	4.30 / 1.51	4.17 / 2.56	1.61 / 2.53	0.12 / 2.51	3.88 / 1.51	1.14 / 0.82	3.35 / 0.83	1.08 / 0.87	0.10 / 0.18	0.25 / 0.09	0.59 / 0.35	21.08 / 14.48	146
Greenville Ranger Station	Plumas	2.78 / 2.81	9.83 / 4.91	11.71 / 5.93	3.28 / 8.89	0.44 / 7.44	11.83 / 8.47	2.92 / 2.84	4.83 / 1.71	1.29 / 0.75	0.21 / 0.35	0.01 / 0.21	1.81 / 0.95	50.54 / 42.98	118
Sierraville Ranger Station	Sierra	1.19 / 1.83	8.21 / 2.76	8.09 / 4.49	3.55 / 4.94	0.79 / 4.23	6.55 / 2.84	1.95 / 1.63	3.88 / 1.25	0.66 / 0.54	0.06 / 0.29	0.11 / 0.15	0.59 / 0.44	35.63 / 25.39	140
Vinton	Plumas	0.38 / 0.89	3.85 / 1.44	2.85 / 2.12	0.84 / 1.94	0.14 / 1.87	2.77 / 1.43	1.08 / 0.84	2.99 / 1.01	0.82 / 0.50	0.40 / 0.36	0.10 / 0.18	0.25 / 0.25	16.27 / 12.83	127

Note; Figures above line are for current season; below line are long-term averages.

TABLE 4

RUNOFF AT SELECTED STATIONS - 1970-71 SEASON (IN ACRE-FEET)

Station	Oct.	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept.	Total	Average	Percent Average
Shasta River near Yreka	10,170	18,870	27,020	28,970	17,780	27,890	18,770	22,080	12,010	4,090	2,120	5.050	192,800	131,100	147
Hat Creek near Hat Creek	8,970	10,350	9,760	10,160	8,830	10,080	10 320	13,850	15,820	12,070	10,210	9,530	130,900	97,810	134
Pit River near Canby	4,800	15,160	27,680	50,210	18,190	95,580	88,240	73,140	103,900	19,190	5,600	7,930	489,400	171,700	285
South Fork Pit River near Likely	2,400	2,820	1,480	2,720	757	5 470	15,070	32,270	38,300	11,730	10,840	4,780	126,800	53,830	235
Susan River at Susanville	688	1,870	3,040	7,950	6,230	15,350	16,470	26,820	12,000	5,810	4,670	930	101,800	71,150	143
Indian Creek near Crescent Mills	3,990	15,780	37,070	47,630	40,380	122,300	132,300	152,200	85,820	20,660	10,550	8,350	678,000	398,500	170
Middle Fork Feather River near Clio	3,310	9,170	19,110	23,540	25,970	114,000	83,880	78,550	37,110	10,030	3,720	2 870	391,200	208,700	187
Butte Creek near Chico	7,660	22,080	40,940	38,030	25,100	58,790	42,860	38,780	22,380	13,590	10,750	8,780	323,500	292,700	111

1971 WATERMASTER SERVICE

This part of the report consists of 17 sections, each of which describes one of the service areas active in 1971 and the water distribution therein.

Each section begins with a description of the geography, major sources of water supply, and normal method of distribution for the particular area. Pertinent information about the 1971 season, including supply and distribution of water for each major source and other significant items, is also reported. Tables of recorded streamflow data and schematic diagrams or maps of the stream systems, including location of the diversions, conclude each section.

Mr. Edwin J. Barnes, Supervising Watermaster in the Northern District since 1965, took another assignment on July 1, 1971, and Mr. C. Wesley York took over this position.

Each year the watermaster season begins when the need arises in each area, depending upon conditions of streamflow and the farmers' need for water. The season ends on September 30 in all areas. The date service was begun in each area and the name of the watermaster are listed below.

Service Area	Beginning Date	Watermaster
Ash Creek	May 3	Kenneth E. Morgan
Big Valley	May 1	Virgil D. Buechler
Burney Creek	June 1	Virgil D. Buechler
Butte Creek	May 1	John M. Miller
Cow Creek	June 1	Ross P. Rogers
Digger Creek	July 1	Ross P. Rogers
French Creek	July 1	John A. Nolan
Hat Creek	May 1	Virgil D. Buechler
Indian Creek*	April 22	Harvey M. Jorgenson
Middle Fork Feather River*	April 1	Conrad Lahr H. Joe Nessler
N. F. Cottonwood Creek	July 1	Ross P. Rogers
N. F. Pit River	April 20	Charles H. Holmes
Shackleford Creek	June 1	John A. Nolan
Shasta River	April 1	John A. Nolan
S. F. Pit River	May 3	Kenneth E. Morgan
Surprise Valley	March 19	Alden B. Moore
Susan River	April 1	Lester L. Lighthall

* Within Central District; all others in Northern District

Ash Creek Watermaster Service Area

The Ash Creek service area is located in Modoc and Lassen Counties near the town of Adin. There are 30 water right owners in this area with total allotments of 123.65 cubic feet per second.

The major sources of water supply for the service area are Ash Creek and three tributaries, Willow Creek, Rush Creek, and Butte Creek. Ash Creek rises in the eastern part of the service area and flows westerly through the town of Adin into Ash Creek Swamp and then into the Pit River. Rush Creek heads in the northeastern part of the service area and joins Ash Creek above the town of Adin. Willow Creek and Butte Creek originate in the southeastern part of the service area and join Ash Creek near the head of Ash Creek Swamp. Each of these streams is independently regulated.

Approximately 85 percent of the water rights in the service area are in Big Valley, west of the town of Adin. The remaining water rights are along the upstream tributaries and in Ash Valley. The portion of Big Valley served is approximately 10 miles long by 6 miles wide, extending from the town of Adin to the confluence of Ash Creek and the Pit River. The valley floor is at an elevation of approximately 4,200 feet.

A schematic drawing of each major stream system within the Ash Creek service area is presented as Figure 2, page 13.

Water Supply

The water supply for Ash and Rush Creeks is derived primarily from snowmelt, since most of the watershed is between 5,000 and 6,000 feet in elevation. Willow Creek and Butte Creek receive a substantial portion of their water from springs. These creeks normally have sufficient water to satisfy demands until about June 1, after which the supply decreases rapidly. By the latter part of June, Ash Creek normally has receded to about 20 cubic feet per second, Rush Creek to about two cubic feet per second, Willow Creek to about five cubic feet per second, and Butte Creek to less than one cubic foot per second. The flow of these creeks then remains nearly constant for the remainder of the season.

The daily mean discharge of Ash Creek at Adin is presented in Table 5, page 12. This stream gaging station is located below a substantial number of the points of diversion; consequently, the table does not include all of the available supply of this creek.

No stream gaging stations were installed on Butte, Rush, or Willow Creeks during the 1971 season.

Method of Distribution

Irrigation diversions from Ash Creek and its tributaries are accomplished by small dams placed in the stream channels. Most of the users have several diversion ditches at these dams. These ditches convey the water to the fields where it is spread by means of small laterals. Some of the users employ a system of checks and borders, but most of the land is irrigated by wild flooding. Return flow is captured by downstream ranches for reuse. In one case a rancher may recirculate his drain water before returning it to the creek for further use. In a few areas, pumps are used to divert the water into ditches or through sprinkler systems.

The Ash Creek decree (see Table 1) establishes the number of priority classes on the various stream systems within the Ash Creek service area as follows: Ash Creek - five; Willow Creek - four; Rush Creek - one; and Butte Creek - two.

1971 Distribution

Watermaster service began May 3 in the Ash Creek service area and continued until September 30. Kenneth E. Morgan, Water Resources Engineering Associate, was watermaster during this period. The water supply was above average throughout the irrigation season.

Willow Creek. The available water supply in Willow Creek was sufficient to satisfy all allotments (four priorities) until mid-July. After haying operations in late July there was a demand for water by all users. At that time and for the remainder of the season, the flow was sufficient to supply 60 percent of second priority allotments.

Butte Creek. The available water supply in Butte Creek was sufficient to satisfy all allotments (two priorities) until late June. During the remainder of the season the flow gradually decreased. However, no distribution problems were encountered.

Ash Creek. The available water supply in Ash Creek was sufficient to meet all demands (five priorities) until haying time in late June. After haying and for the remainder of the irrigation season, water was available for first priority allotments only.

Rush Creek. The available water supply in Rush Creek was sufficient to satisfy all allotments (one priority) until the end of July. By late September the flow had gradually decreased to about 85 percent of all allotments.

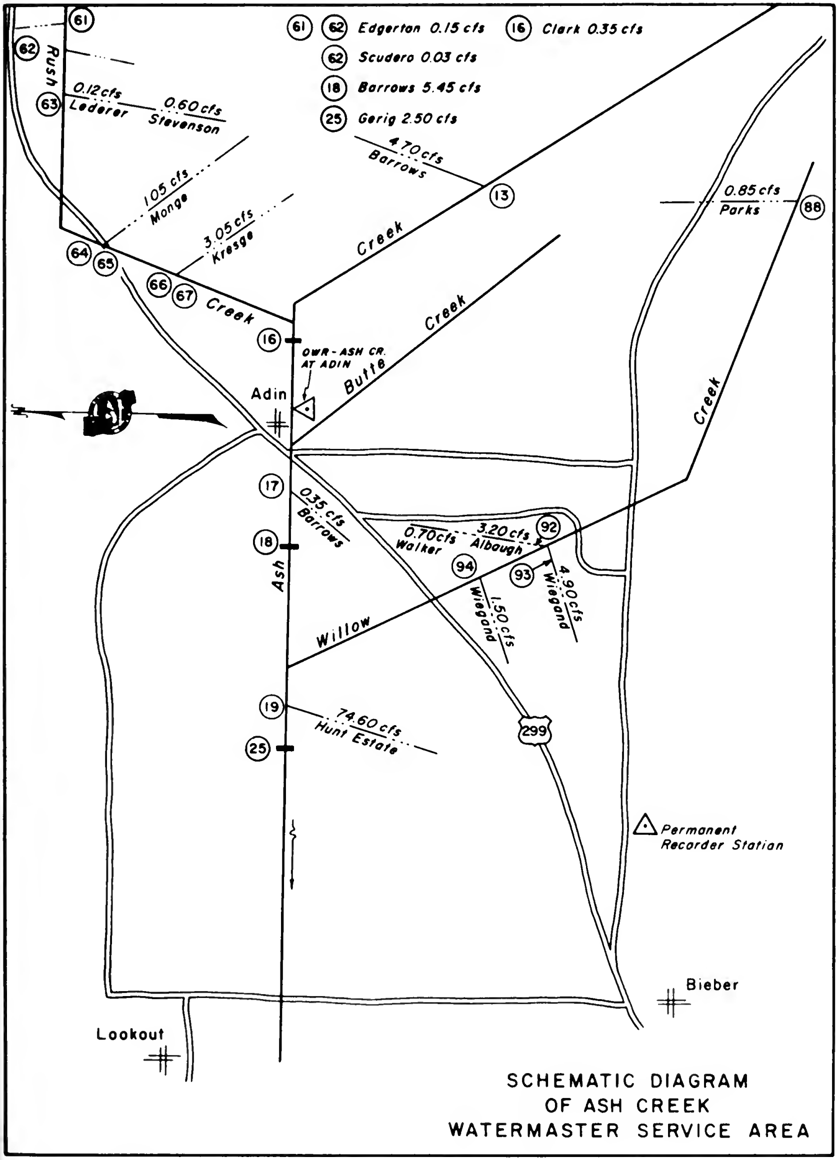
ASH CREEK WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 5

ASH CREEK AT ADIN

Day	March	April	May	June	July	August	September	Day
1	65	417	239	356	59	23	28	1
2	61	375	247	369	46	23	28	2
3	71	346	353	355	34	22	23	3
4	84	329	599	249	34	24	20	4
5	82	323	375	181	35	33	20	5
6	79	327	334	148	36	24	25	6
7	85	331	316	131	34	24	24	7
8	86	306	363	119	33	24	19	8
9	92	297	370	112	32	25	18	9
10	93	334	302	118	30	24	16	10
11	107	295	273	96	29	24	16	11
12	345	261	257	89	28	24	17	12
13	537	245	227	81	28	23	18	13
14	349	235	198	77	27	21	18	14
15	295	216	181	71	27	17	21	15
16	339	200	167	64	26	21	23	16
17	304	285	153	60	26	21	23	17
18	228	300	147	53	31	21	24	18
19	265	265	130	51	31	21	25	19
20	317	257	113	49	29	18	28	20
21	383	305	113	45	28	19	28	21
22	370	281	107	44	26	21	27	22
23	876	238	97	39	28	22	27	23
24	939	208	90	39	25	22	27	24
25	962	241	90	42	24	21	33	25
26	1620	338	89	87	23	21	37	26
27	1220	315	97	91	23	23	34	27
28	824	281	109	131	23	24	32	28
29	645	262	113	87	27	24	38	29
30	576	258	122	68	24	25	49	30
31	483		183		23	27		31
Mean	412	289	210	116	29.9	22.8	25.4	Mean
Runoff In Acre-Feet	25353	17195	12960	6942	1839	1400	1513	Runoff In Acre-Feet



SCHEMATIC DIAGRAM
OF ASH CREEK
WATERMASTER SERVICE AREA

Big Valley Watermaster Service Area

The Big Valley service area is located in Modoc and Lassen Counties in the vicinity of the towns of Lookout and Bieber. There are 51 water right owners in the area with total allotments of 231.03 cubic feet per second.

The Pit River is the major source of water supply for the service area. The river enters the valley north of the town of Lookout and flows southerly through the western part of the valley and out its southern end. The major place of use is about 13 miles of valley floor along the Pit River at an approximate elevation of 4,200 feet.

A schematic drawing of the Big Valley stream system is presented as Figure 3, page 18.

Water Supply

The available water supply in the Pit River as it flows through Big Valley is ordinarily adequate to satisfy all demands until about June 1. The irrigation practices in Hot Springs Valley, located about 20 miles upstream from Big Valley, have a significant effect on the available water supply in Big Valley throughout the remainder of the irrigation season. Water users in Hot Springs Valley divert most of the flow in Pit River for two- or three-week periods. Natural flow available for use in Big Valley during these periods is often less than 20 cubic feet per second. Periodic releases from channel storage reservoirs in the lower end of the valley sometimes increase the flow to as much as 200 to 300 cubic feet per second for relatively short periods. Consequently, equitable water distribution in Big Valley is very difficult to attain.

Roberts Reservoir, located on a minor tributary of the Pit River at the upper end of Big Valley above Lookout, serves as a supplemental source of water to those users in the area who are members of the Big Valley Mutual Water Company. Water from this reservoir is released into the Pit River and distributed to members of the water company along with the natural flow to which they are entitled.

Records of two stream gaging stations in the Big Valley service area are presented in Tables 6 and 7, page 17.

Method of Distribution

Most water users in the Big Valley service area irrigate on a rotation schedule by either wild flooding or by checks and borders. Large flashboard dams placed in the channel make it possible to use the large heads of water characteristic of the supply in the area. In addition, some pumps are used for diversion, both in ditches and directly into sprinkler systems. The ranches which irrigate by wild flooding must use large heads of water in order to cover unleveled or high ground. Much of the runoff is recaptured for use by downstream lands, resulting in a relatively high irrigation efficiency for the valley.

The Big Valley decree (see Table 1) provides for the distribution of water from Pit River in four priority classes.

1971 Distribution

Watermaster service began May 1 in the Big Valley service area and continued until September 30. Virgil Buechler, Water Resources Technician II, was watermaster during this period.

The season began with Big Sage and West Valley Reservoirs at capacity. West Valley spilled water until July 30. The snowpack in the Warner Mountains was slightly above normal in May. A large winter-type storm hit the Big

Valley and Warner Mountain area from May 27 through June 1. This storm deposited 4 to 5 inches of precipitation in the valley and added to the existing snowpack in the Warners.

The flows in the Pit River were above normal throughout the season and peaked at 4,700 cubic feet per second on June 5. The high flows in June caused some flooding of the valley and some new crops were damaged. Surplus water allowed most users to irrigate as they wished until August 4. One exception was the Fulcher pipe users; the Gerig Dam storage was lowered while the haying operation was in process and water would not gravity-flow through the Fulcher pipe.

By August 4, Big Valley haying operations were completed so the river dams were installed and an irrigation rotation started. With the available water supply being above normal, a 100 percent irrigation was completed in 15 days on August 19. Two more full irrigations were closely regulated by the watermaster and completed by September 17. Since surplus was available, the users finished irrigating the remainder of the season as they wished.

From August 4 to 19, Roberts Reservoir water was released for use by the shareholders as follows:

Name	Acre-Feet
Eicholz Ranch	100
Norris Gerig	100
L. W. Kramer	100
Merlin Kennedy	50
D. Babcock and C. Hawkins	300
Total	650

BIG VALLEY WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 6

PIT RIVER NEAR CANBY

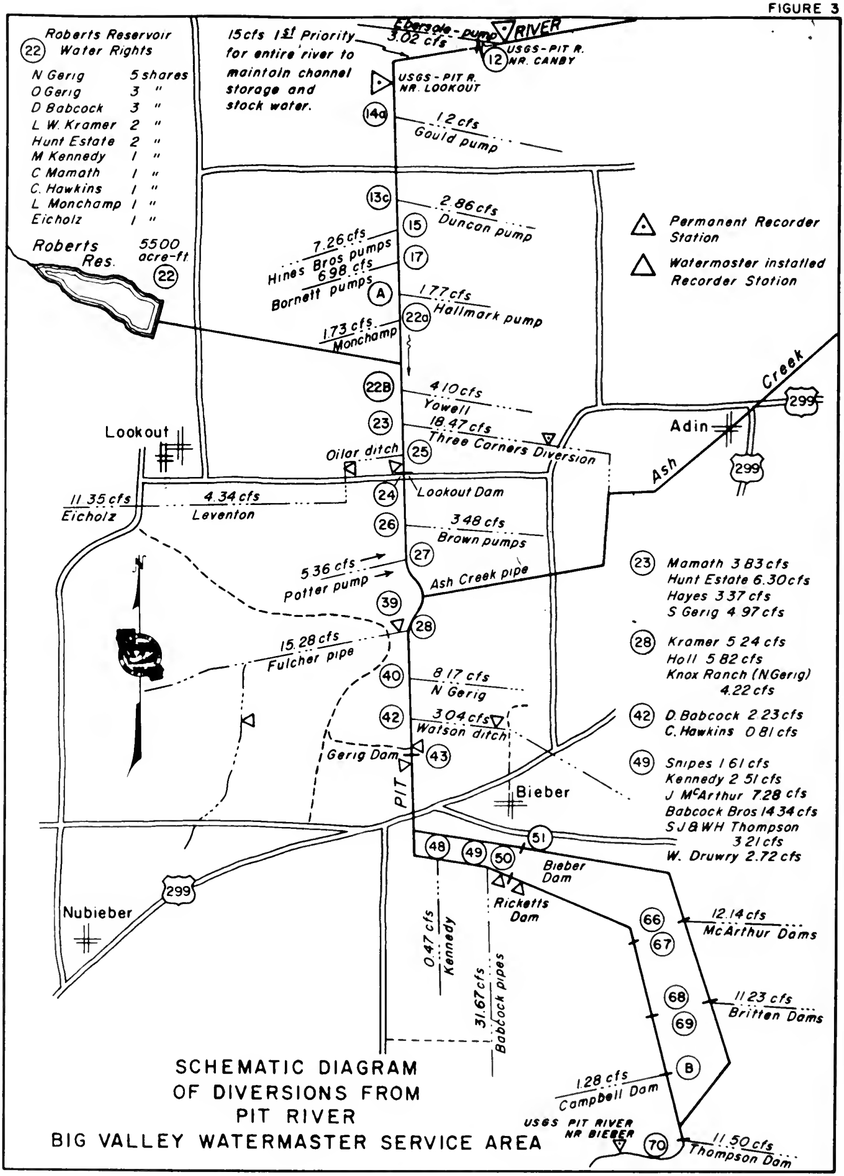
Day	March	April	May	June	July	August	September	Day
1	162	2310	1150	1850	1020	36	39	1
2	217	1930	1080	2810	992	43	34	2
3	272	1830	1030	3550	884	135	71	3
4	254	1420	1090	4140	754	182	111	4
5	237	1270	1370	4430	810	148	110	5
6	218	1180	1530	4080	500	155	113	6
7	227	1140	1840	3530	430	143	159	7
8	227	1110	1680	3080	420	142	238	8
9	215	1050	1640	2640	410	194	219	9
10	229	1060	1700	2300	375	185	208	10
11	228	1040	1880	2040	322	123	172	11
12	297	997	1810	1820	324	28	159	12
13	479	936	1590	1810	298	50	147	13
14	802	889	1530	1470	199	63	130	14
15	899	872	1470	1330	142	69	129	15
16	980	881	1410	1200	180	90	127	16
17	1030	932	1340	1060	139	104	113	17
18	998	974	1250	938	139	83	136	18
19	918	985	1180	800	203	110	113	19
20	990	1000	1070	720	158	88	111	20
21	1250	1020	960	654	178	78	108	21
22	1860	1010	851	594	192	77	106	22
23	2600	1020	775	556	148	109	110	23
24	3330	1000	716	558	111	90	106	24
25	3470	988	656	539	76	61	107	25
26	4980	1030	641	561	65	42	104	26
27	5540	1110	621	715	117	44	117	27
28	4890	1180	662	836	115	51	139	28
29	4240	1230	776	884	75	51	198	29
30	3380	1210	954	988	57	44	262	30
31	2770		1260		44	45		31
Mean	1554	1147	1189	1746	312	91.0	133	Mean
Runoff In Acre-Feet	95580	68240	73140	103900	19190	5600	7930	Runoff In Acre-Feet

TABLE 7

PIT RIVER NEAR BIEBER

Day	March	April	May	June	July	August	September	Day
1	394	5290	1720	1350	986	71	7.6	1
2	330	4370	1690	1760	1050	86	6.0	2
3	388	3720	1680	2160	1050	52	9.6	3
4	450	3250	1910	2810	1040	45	12	4
5	474	2900	2200	3360	818	40	8.4	5
6	470	2640	2280	3790	615	16	9.2	6
7	462	2420	2220	4120	410	16	24	7
8	450	2330	2240	4100	688	20	12	8
9	454	2220	2380	3760	712	19	8.8	9
10	454	2170	2440	3360	525	15	9.2	10
11	470	2210	2360	2860	474	13	12	11
12	682	2140	2270	2620	458	12	15	12
13	1490	2000	2140	2280	366	14	18	13
14	2800	1890	2030	1950	274	17	32	14
15	2700	1750	1930	1730	257	24	71	15
16	2390	1640	1820	1560	124	38	119	16
17	2460	1700	1710	1420	104	48	106	17
18	2450	1810	1590	1270	119	28	36	18
19	2230	1840	1510	1130	110	34	54	19
20	2060	1790	1410	1000	142	27	308	20
21	2080	1840	1310	879	202	19	293	21
22	2220	1920	1190	742	178	11	126	22
23	2860	1890	1070	658	209	7.2	100	23
24	4320	1810	963	630	182	5.8	93	24
25	5480	1720	872	605	156	5.2	104	25
26	6850	1690	788	575	132	4.5	126	26
27	9850	1700	882	620	103	3.1	122	27
28	10500	1720	630	774	84	2.7	115	28
29	9150	1720	664	907	98	6.8	122	29
30	7540	1720	730	928	95	14	193	30
31	6350		921		83	7.6		31
Mean	2936	2260	1591	1861	362	22.6	75.7	Mean
Runoff In Acre-Feet	180800	134500	97850	110700	23480	1390	4500	Runoff In Acre-Feet

FIGURE 3



SCHEMATIC DIAGRAM OF DIVERSIONS FROM PIT RIVER
BIG VALLEY WATERMASTER SERVICE AREA

Burney Creek Watermaster Service Area

The Burney Creek service area is located in Shasta County near the town of Burney. There are 11 water right owners in the area with total allotments of 33.09 cubic feet per second. The source of water supply for this service area is Burney Creek, which enters the southern part of the service area and flows through Burney in a northerly direction to the Pit River. The portion of the valley served by this stream is approximately 11 miles long and two miles wide, and extends both north and south of Burney. The service area is at approximately 3,200 feet elevation.

A schematic drawing of the Burney Creek stream system is presented as Figure 4, page 21.

Water Supply

The water supply for Burney Creek comes from springs and snowmelt. Most of the watershed lies between the elevations of 4,000 and 7,500 feet on the northeast slopes of Burney Mountain. The creek normally has sufficient water to supply all demands until about the middle of June. The supply then gradually decreases until the end of July. For the remainder of the irrigation season runoff from perennial springs keeps the flow nearly constant at approximately 40 percent of allotments.

The daily mean discharge of Burney Creek near Burney is presented in Table 8. The stream gaging station on Burney Creek is located below four points of diversion; consequently, the records do not show all of the available water supply of the creek.

Water Supply

The Burney Creek decree (see Table 1) sets forth a rotation schedule of distribution. The water users, however, have found it more beneficial to irrigate on a continuous-flow basis (one priority class plus surplus allotments), which is now normal practice. The water allotted to the Greer-Cornaz Ditch is distributed in accordance with supplemental court decrees.

Water is diverted from Burney Creek, in most cases by means of low diversion dams, into ditches which convey it to the place of use. Lateral ditches are then used to irrigate the land.

Method of Distribution

Watermaster service began June 1 in the Burney Creek service area and continued until September 30. Virgil D. Buechler, Water Resources Technician II, was watermaster during this period.

All allotments were distributed on a continuous-flow basis. This practice, rather than that of rotation as called for in the decree, has been used for many years by agreement of the water right owners.

The Pierpont Ranch, lowest decreed user on Burney Creek, did not irrigate during the 1971 season. Therefore, except for stockwater delivered to the ranch, its water rights were apportioned among the other users on the creek.

The available water supply for the 1971 irrigation season was above normal. Surplus flow was available to all users until early August. All diversions were then regulated to 100 percent of first priority allotments. The supply then remained at 100 percent through the remainder of the season.

1971 Distribution

The Greer-Cornaz ditch was cleaned from Diversion 7A to Diversion 8. Also, a concrete headwall and headgates were installed at the head of this ditch.

Forest Publishers Products installed a new diversion dam and headgate at Diversion 1. An earth dam with headgate was constructed across Canyon Creek at State Route 299.

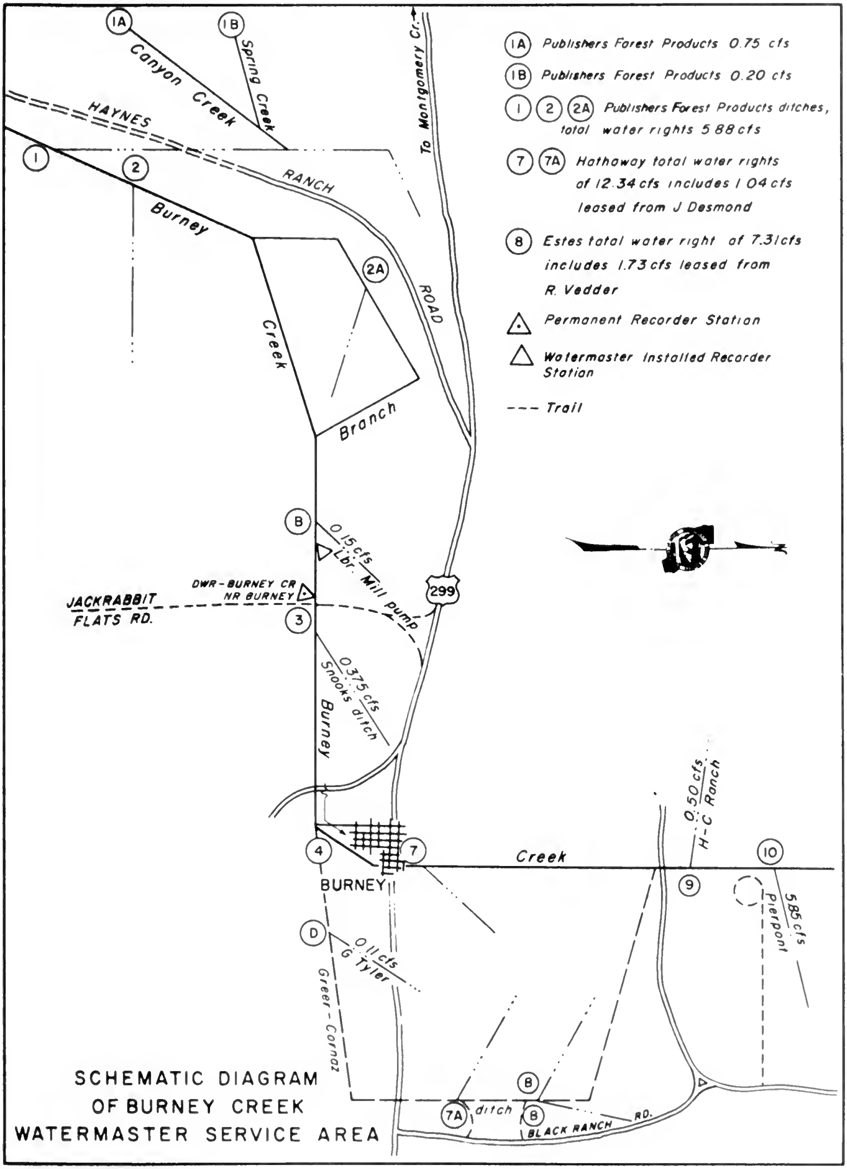
BURNEY CREEK WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 8

BURNEY CREEK NEAR BURNEY

Day	March	April	May	June	July	August	September	Day
1	58	253	211	198	73	23	18	1
2	53	249	214	160	64	23	16	2
3	55	247	318	138	59	21	17	3
4	55	248	366	133	55	20	18	4
5	49	257	306	132	52	21	18	5
6	46	283	265	123	50	20	19	6
7	45	281	260	119	48	18	20	7
8	45	269	274	117	47	18	21	8
9	46	283	252	110	45	18	18	9
10	46	374	240	103	44	19	18	10
11	61	288	240	98	44	19	20	11
12	307	255	253	93	43	17	21	12
13	288	262	260	91	42	17	19	13
14	207	258	232	85	39	16	17	14
15	154	269	207	78	36	16	17	15
16	133	276	189	75	33	17	18	16
17	128	294	165	72	32	18	18	17
18	110	234	147	75	33	17	18	18
19	106	216	137	71	33	17	18	19
20	105	234	137	68	32	18	17	20
21	109	205	134	67	31	18	17	21
22	123	182	131	61	29	19	17	22
23	362	171	134	58	27	20	16	23
24	466	182	137	51	27	20	16	24
25	443	157	142	53	27	20	18	25
26	911	164	213	106	26	19	25	26
27	586	172	189	201	25	20	27	27
28	412	179	219	147	25	19	27	28
29	337	196	167	97	23	19	47	29
30	328	211	196	80	21	19	57	30
31	273		192		22	20		31
Mean	208	237	210	102	38.3	18.9	21.1	Mean
Runoff In Acre-Feet	12787	14140	12946	6069	2354	1162	1256	Runoff In Acre-Feet


1A Publishers Forest Products 0.75 cfs
1B Publishers Forest Products 0.20 cfs
1 2 2A Publishers Forest Products ditches, total water rights 5.88 cfs
7 7A Hathaway total water rights of 12.34 cfs includes 1.04 cfs leased from J Desmond
8 Estes total water right of 7.31 cfs includes 1.73 cfs leased from R. Vedder
Permanent Recorder Station
Watermaster Installed Recorder Station
Trail
Canyon Creek
Spring Creek
HAYNES
RANCH
ROAD
To Montgomery Cr.
Burney
Creek
Branch
0.15 cfs Lbr. Mill pump
DWR-BURNEY CR NR BURNEY
JACKRABBIT FLATS RD.
299
0.375 cfs Snooks ditch
Burney
BURNEY
Creek
0.50 cfs H-C Ranch
5.85 cfs Pierpont
0.11 cfs G. Tyler
Greer-Cornaz
ditch
BLACK RANCH RD.
SCHEMATIC DIAGRAM OF BURNEY CREEK WATERMASTER SERVICE AREA

Butte Creek Watermaster Service Area

The Butte Creek service area is located in Butte County southeast of the City of Chico. There are 33 water right owners in the area with total allotments of 422.30 cubic feet per second. Butte Creek is the major source of water supply. The watermaster service area extends for about 11 miles along Butte Creek, commencing approximately 4 miles east of Chico and extending downstream to the crossing of Western Canal. It contains about 20,000 acres of valley floor lands at an average elevation of 150 feet.

A schematic drawing of the Butte Creek stream system is presented as Figure 4, page 27.

Water Supply

Butte Creek, above the watermaster service area, drains approximately 150 square miles of the western slope of the Sierra Nevada Mountains in the northeasterly portion of Butte County. The maximum elevation in the watershed is about 7,000 feet.

Snowmelt normally produces sustained high flows in the creek until about the end of June, after which perennial springs continue to produce flows of more than 40 cubic feet per second. Additional water is imported for distribution from the West Branch Feather River by means of the Hendricks (Toadtown) Canal through De Sabla Reservoir and Powerhouse into Butte Creek.

Records of the daily mean discharge at stream gaging stations in the Butte Creek service area are presented in Tables 9, 10, and 11, pages 24 and 25.

Method of Distribution

Water is diverted from Butte Creek by pumping and by gravity diversions. Parrott Investment Company, M & T Inc., Dayton Mutual Water Company, and Durham Mutual Water Company divert relatively large amounts of water by gravity into ditches leading to their individual distribution systems. Various methods of irrigation are in general practice. These include contour checks, strip or border checks, basin checks, furrows, wild flooding, and sprinklers. The use of sprinklers has increased in popularity with the past few years, especially for use on orchards.

Water diverted to Butte Creek from the West Branch Feather River through the Hendricks Canal and De Sabla Powerhouse at times causes wide fluctuation in the Battle Creek flow. In accordance with "Memorandum and Order" entered May 10, 1949, by the Superior Court of Butte County, water users below Parrott Dam (where the imported water is rediverted) must be provided their natural flow allotments at all times without undue fluctuation caused by intermittent presence of imported water. For the past several years PG&E has maintained reasonably steady releases.

The Butte Creek decree (see Table 1) established three priority classes for summer distribution purposes and, in addition, defined two surplus flow allotments.

1971 Distribution

Watermaster service began May 1 in the Butte Creek service area and continued until September 30. John M. Miller, Water Resources Technician II, was watermaster during this period.

The available water supply for the 1971 irrigation season on Butte Creek was one of the best on record. Some water was available for the higher surplus class users throughout the season. This is an extremely unusual situation.

BUTTE CREEK WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 9

BUTTE CREEK NEAR CHICO

Day	March	April	May	June	July	August	September	Day
1	335	943	584	498	272	192	155	1
2	323	872	598	468	254	192	161	2
3	321	840	612	444	268	192	155	3
4	323	816	605	428	259	188	151	4
5	313	816	612	422	254	186	151	5
6	306	832	605	417	254	186	151	6
7	300	824	605	422	250	182	151	7
8	296	784	633	422	238	186	144	8
9	294	752	612	422	242	182	144	9
10	292	888	633	422	242	182	144	10
11	316	816	672	422	234	182	141	11
12	2190	760	728	406	226	178	144	12
13	1530	752	728	390	218	178	141	13
14	921	728	704	380	210	178	141	14
15	770	744	680	370	210	175	138	15
16	690	744	664	365	214	175	135	16
17	693	808	612	355	206	172	138	17
18	621	720	577	350	206	172	135	18
19	584	672	564	340	210	172	138	19
20	580	680	564	335	208	175	141	20
21	550	619	564	325	206	175	129	21
22	541	605	522	315	203	175	126	22
23	1030	577	534	305	200	175	130	23
24	1160	584	534	300	196	175	142	24
25	1680	546	552	290	200	168	145	25
26	4380	534	591	345	196	168	150	26
27	2160	516	552	400	196	161	171	27
28	1570	534	564	325	196	158	164	28
29	1320	552	528	300	196	155	161	29
30	1200	570	516	290	196	151	211	30
31	1060		488		192	135		31
Mean	924	717	598	376	221	175	148	Mean
Runoff In Acre-Feet	56790	42660	36760	22360	13590	10750	8780	Runoff In Acre-Feet

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 10

BUTTE CREEK NEAR DURHAM

Day	March	April	May	June	July	August	September	Day
1	325	898	415	348	93	18	28	1
2	318	836	407	316	80	19	43	2
3	313	807	421	290	92	19	35	3
4	314	784	462	289	80	47	37	4
5	306	772	460	268	78	61	50	5
6	301	766	443	260	90	62	77	6
7	299	755	440	265	103	41	62	7
8	288	735	473	256	83	43	48	8
9	283	714	462	246	79	55	21	9
10	278	808	489	247	84	47	16	10
11	285	766	494	245	76	32	16	11
12	1850	709	530	234	77	26	15	12
13	1830	685	528	237	53	24	16	13
14	950	680	509	227	42	23	18	14
15	765	659	497	191	38	20	18	15
16	652	651	487	168	52	21	18	16
17	634	683	461	159	46	14	18	17
18	549	631	446	156	45	14	18	18
19	482	595	430	151	41	16	18	19
20	453	603	425	133	40	30	17	20
21	435	552	425	122	35	42	17	21
22	421	540	382	108	36	40	16	22
23	625	485	391	103	33	34	15	23
24	1030	442	389	101	39	23	69	24
25	1070	456	387	97	40	24	124	25
26	3190	448	405	145	32	21	133	26
27	2560	425	378	245	28	20	164	27
28	1820	398	396	143	22	18	155	28
29	1280	400	366	118	22	19	151	29
30	1130	412	368	104	22	30	243	30
31	1010		339		20	32		31
Mean	833	635	434	198	54.8	30.2	55.8	Mean
Runoff In Acre-Feet	51265	37833	26743	11810	3370	1857	3320	Runoff In Acre-Feet

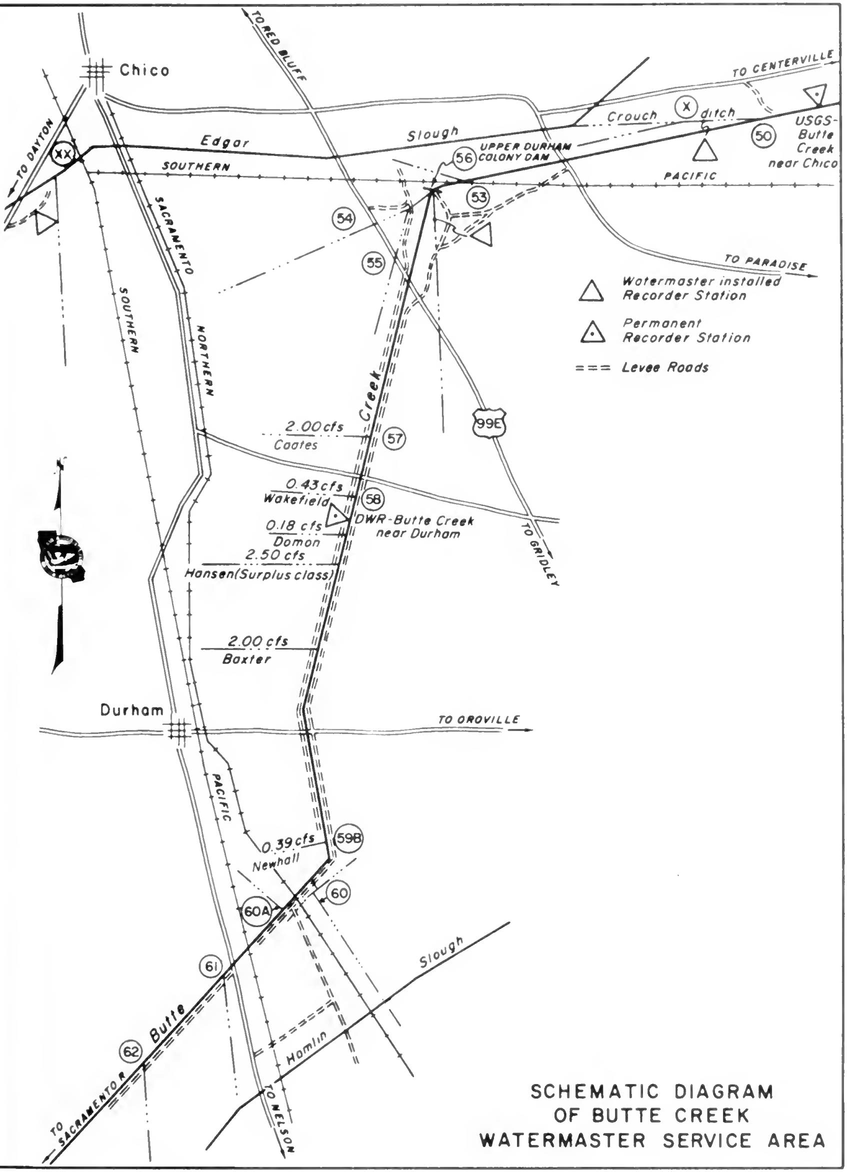
TABLE 11

TOADTOWN CANAL ABOVE BUTTE CANAL

Day	March	April	May	June	July	August	September	Day
1	98	125	114	111	89	92	67	1
2	96	124	116	108	98	92	65	2
3	95	122	116	108	110	92	64	3
4	96	121	117	110	110	90	63	4
5	93	114	121	113	110	89	65	5
6	91	114	117	113	110	89	65	6
7	91	114	115	110	110	88	65	7
8	89	119	121	109	110	87	64	8
9	89	117	117	110	109	87	63	9
10	88	119	114	110	106	86	62	10
11	98	114	114	108	103	86	62	11
12	118	116	114	107	93	86	63	12
13	112	114	91	105	91	86	63	13
14	116	114	114	104	91	85	81	14
15	109	113	113	106	95	79	60	15
16	112	114	109	110	95	78	60	16
17	116	116	111	109	93	78	83	17
18	119	118	112	109	95	77	63	18
19	114	114	114	109	96	76	65	19
20	112	114	109	109	95	76	65	20
21	112	116	110	109	95	75	47	21
22	111	114	110	109	92	74	37	22
23	116	114	109	109	93	73	62	23
24	107	113	110	107	92	69	66	24
25	126	113	110	108	95	74	67	25
26	122	110	110	112	95	76	69	26
27	124	110	111	111	93	69	77	27
28	127	113	111	112	93	69	71	28
29	121	112	111	112	93	64	77	29
30	120	114	112	108	92	64	98	30
31	120		111		92	44		31
Mean	108	116	112	109	97.9	79.0	64.6	Mean
Runoff In Acre-Feet	6660	6870	6810	6500	6020	4860	3850	Runoff In Acre-Feet

Diversion #		Water Right Owner	Amount in cfs	Remarks
Butte Creek				
50		M. & T. Incorporated	53.33	Imported water*
		M. & T. Incorporated	25.00	Surplus class
		Parrott Investment Company	53.33	Imported water*
		Parrott Investment Company	25.00	Surplus class
		Taylor	3.00	
	X	Dayton Mutual Water Company	16.00	
	XX	Dayton Mutual Water Company	3.33	Imported water*
		*Water imported by PG&E from West Branch Feather River via Hendricks Canal and released into Butte Creek, less 5% for conveyance losses.		
53		U. S. Department of Agriculture	2.00	
54		Patrick	3.33	
		Lavy	1.89	
		Smith	0.555	
		Towne and Jayred	1.115	
55		Camenzind Brothers	3.11	
56		Durham Mutual Water Company	44.70	
		Parrott Investment Company	2.00	
		Carlson	0.48	
		Bell	0.39	
		Domom Brothers	0.67	
		Logan	0.01	
		Vernoga	1.447	
		Konyn - Amerio	0.40	
		Bebich	0.446	
		Setka	0.447	
		Wheelock	0.26	
		Total	51.25	
60		Newhall Land & Farming Company	6.75	
		Newhall Land & Farming Company	21.25	Surplus class
60A		Phillips	0.66	
61		Gorrill Land Company	1.00	
		(see Hamlin Slough)	20.70	Surplus class
62		White	1.00	
			9.50	Surplus class
Hamlin Slough				
		Newhall Land & Farming Company	16.60	
		Gorrill Land Company	21.70	

(Total diversions from Butte Creek and Hamlin Slough not to exceed 21.70 cfs).



SCHEMATIC DIAGRAM
OF BUTTE CREEK
WATERMASTER SERVICE AREA

Cow Creek Watermaster Service Area

The Cow Creek service area is located in Shasta County in the foothills east of Redding. There are 90 water right owners in the area with total allotments of 56.367 cubic feet per second. The major streams in this area are: North Cow Creek (commonly called Little Cow Creek), Cedar Creek (a tributary to North Cow), Oak Run Creek, and Clover Creek. These creeks, which are all tributaries of Cow Creek, flow in a westerly or southwesterly direction through narrow valleys joining Cow Creek near the town of Palo Cedro. The service area is located in the narrow valleys along the several creeks and consists of small parcels separated by brush-covered hills in the lower elevations. There are dense coniferous forests in the higher regions. The entire area is about 25 miles long by 10 miles wide and varies in elevation between about 500 and 4,000 feet.

A schematic drawing of each major stream system in the Cow Creek service area is presented as Figures 6 through 6c, pages 32 through 35.

Water Supply

Water supply for this service area is derived mostly from springs and seepage, with some early snowmelt runoff. A considerable portion of the watershed consists primarily of low brushy hills which do not accumulate a heavy snowpack. Relatively large amounts of precipitation during the winter normally produce substantial springs and seepage that flow throughout the irrigation season.

Cedar Creek flow is usually sufficient to supply all allotments until about July 15. Thereafter, it steadily decreases throughout the remainder of the season.

The flow of North Cow Creek in average years is adequate to supply nearly 100 percent of all allotments. In dry years it is necessary to reduce allotments up to 50 percent during the latter part of the summer.

The flow of Oak Run Creek is augmented by a first priority allotment of five cubic feet per second of imported water from the North Cow Creek watershed. The combined flow is generally adequate to supply all allotments throughout the season.

Clover Creek produces enough water to meet nearly all allotments throughout the season. In dry years, diversions may be reduced to about 70 percent of decreed allotments.

Records of the daily mean discharge of North Cow Creek near Ingot are presented in Table 12. Numerous additional gaging stations were maintained in various diversion ditches.

Method of Distribution

Water in the Cow Creek service area is used for domestic and stockwatering purposes and for irrigation of meadow hay, alfalfa, small orchards, and vegetable gardens. The alfalfa and hay lands are irrigated primarily by wild flooding, although some sprinklers are used. Furrows are used for irrigating gardens, and basins or checks and sprinklers are used for orchards. Much of the water applied is lost by surface runoff or by deep percolation, some of which returns to the creeks and thereby becomes available for rediversion downstream.

Only one priority allotment was provided in each of the Cow Creek service area decrees (see Table 1) except for the Oak Run Creek decree which contains a surplus allotment.

1971 Distribution

Watermaster service began June 1 in the Cow Creek service area and continued until September 30. Ross P. Rogers, Water Resources Engineering Associate, was watermaster during this period.

The available water supply for the Cow Creek service area was outstanding. An unusually late spring, combined with considerable rainfall and an excellent snowpack at higher elevations, produced the high sustained flows.

Cedar Creek. Cedar Creek consistently has the lowest water supply to water rights ratio in the Cow Creek service area. Even in years of adequate supply on nearby streams, the allotments on Cedar Creek are usually rationed severely.

However, because several water right owners did not use their full entitlements during the 1971 season, all other users received an adequate supply throughout the summer.

North Cow Creek. The water supply in North Cow Creek was one of the best on record. Above-normal spring rainfall contributed heavily to replenishment of the underground reservoirs which provide the major source of supply to the headwaters of the creek in the summer. Surplus water was available throughout the season.

Oak Run Creek. The available water supply in Oak Run Creek was sufficient to supply all demands throughout the season.

Water was available for irrigation of riparian lands downstream from the adjudicated area throughout the summer. This is unusual.

Clover Creek. The available water supply in Clover Creek was sufficient to supply all demands. Surplus water was available throughout the season.

COW CREEK WATERMASTER SERVICE AREA

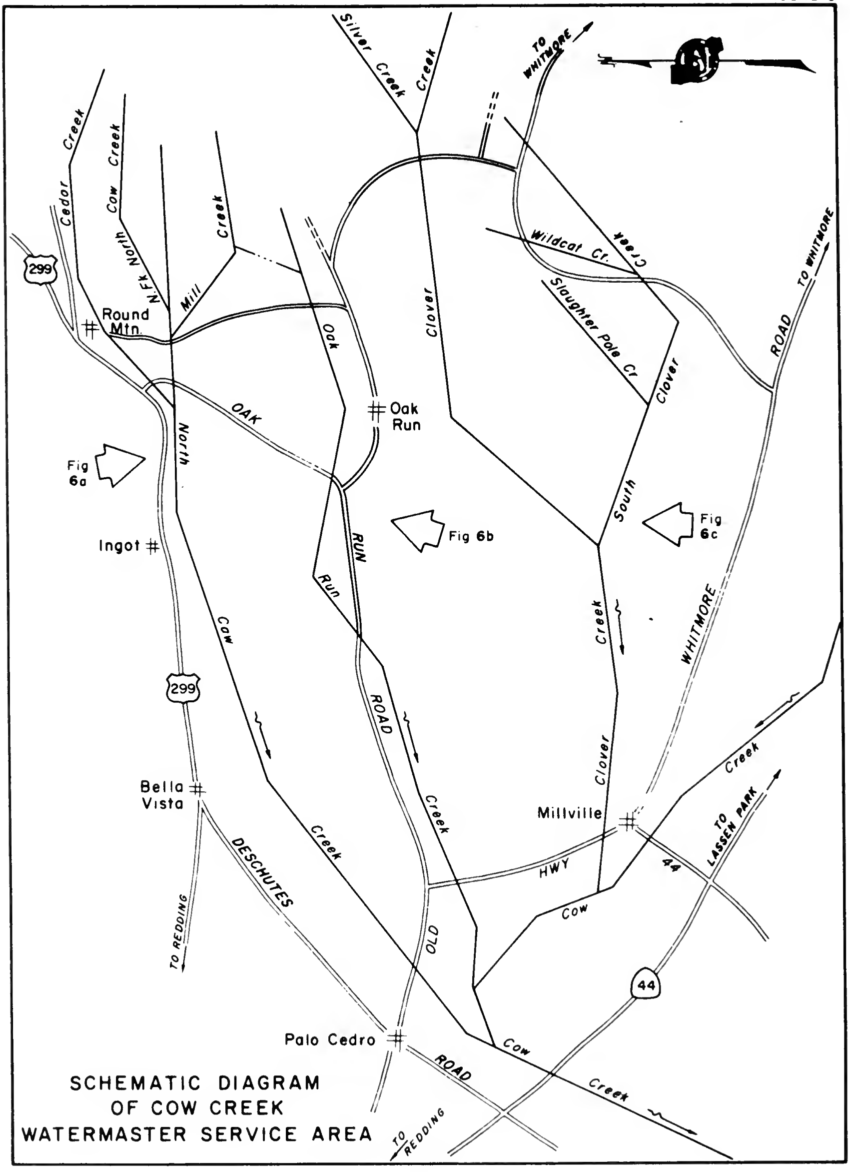
1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 12

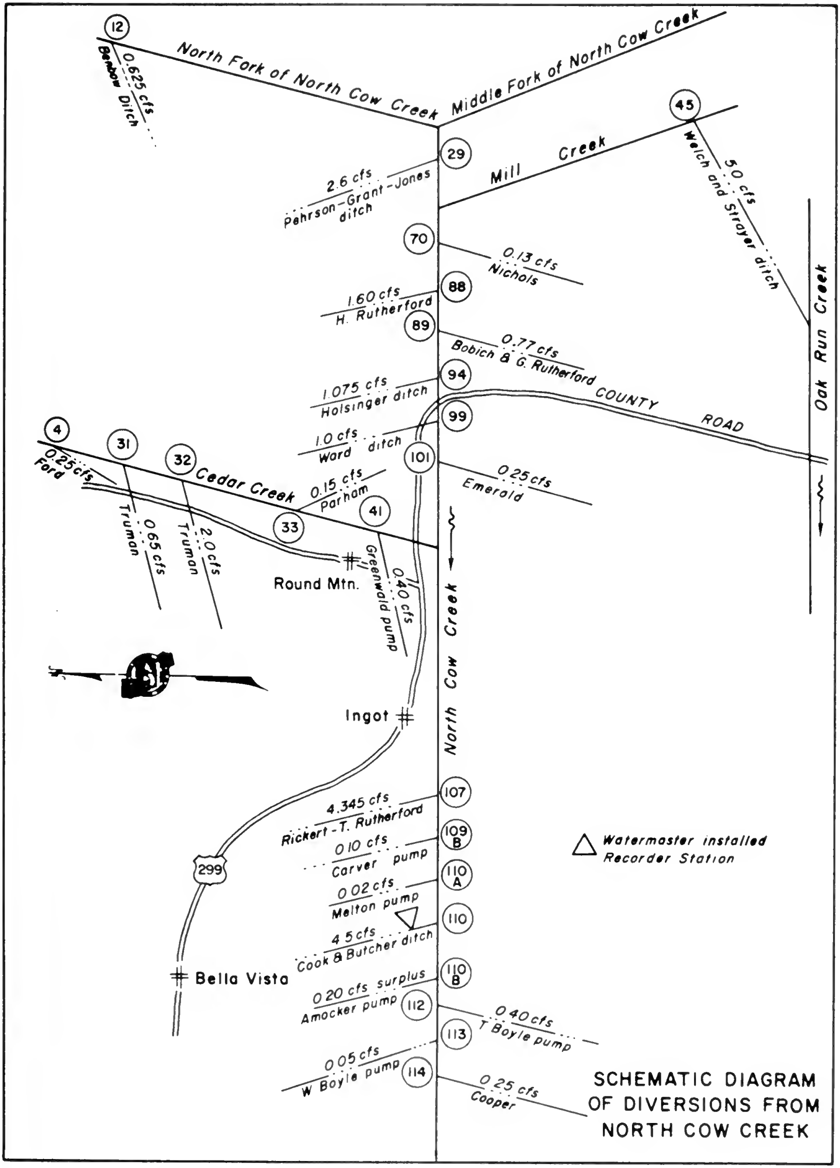
NORTH COW CREEK NEAR INGOT

Day	March	April	May	June	July	August	September	Day
1				94*		14	10	1
2				68		12	9.5	2
3				58		11	10	3
4				62		11	9.5	4
5				60		11	8.5	5
6				57		12	8.5	6
7				57		11	8.0	7
8				58		12	8.0	8
9				54		12	8.5	9
10				56		10	8.0	10
11				50		10	8.0	11
12				48		10	7.5	12
13				45		10	7.5	13
14				43		9.5	7.0	14
15				41		10	6.5	15
16				39		9.5	5.6	16
17				38		10	5.2	17
18				37		9.5	5.2	18
19				35		9.5	6.0	19
20				32		9.5	6.5	20
21				31		10	7.0	21
22				29		9.5	7.0	22
23				28		8.5	7.0	23
24				27		8.0	7.0	24
25				27**		8.5	8.5	25
26						6.5	17	26
27						7.5	16	27
28					14*	8.5	14	28
29					14	9.0	25	29
30					14	9.0	28	30
31					14	11		31
Mean				46.9	14.0	10.0	9.7	Mean
Runoff In Acre-Feet				2320	111	614	575	Runoff In Acre-Feet

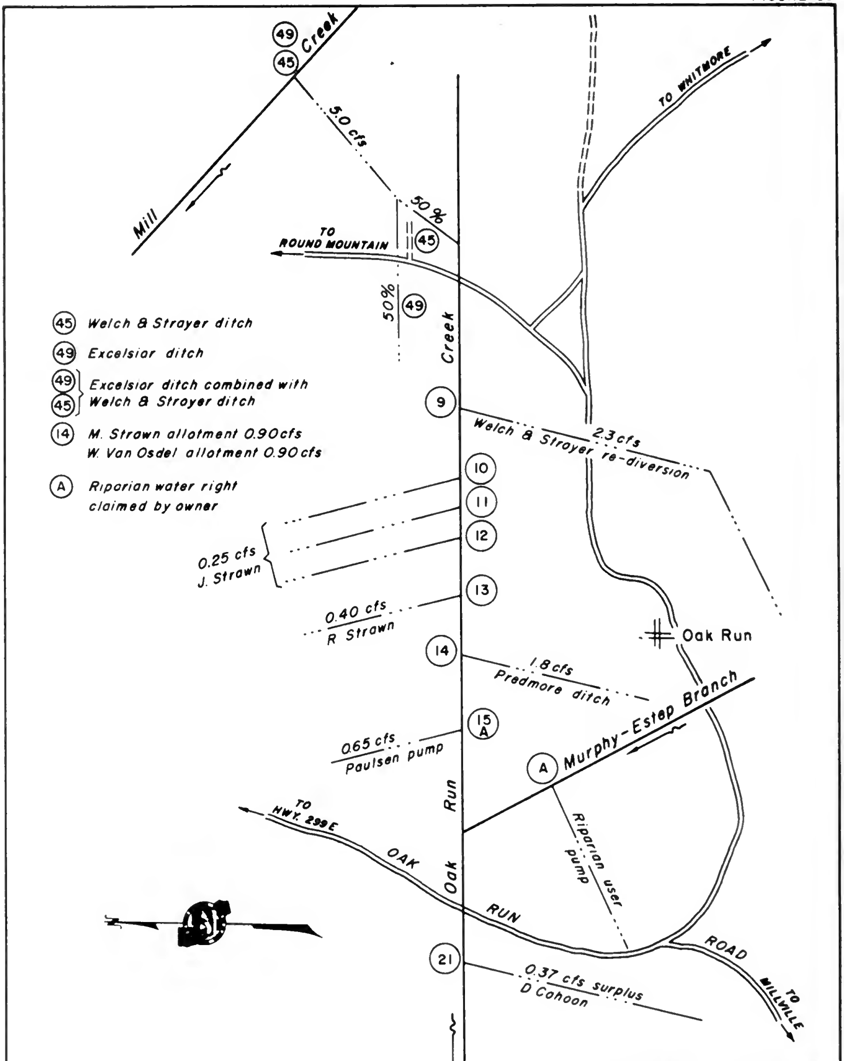
* Beginning of Record
** End of Record



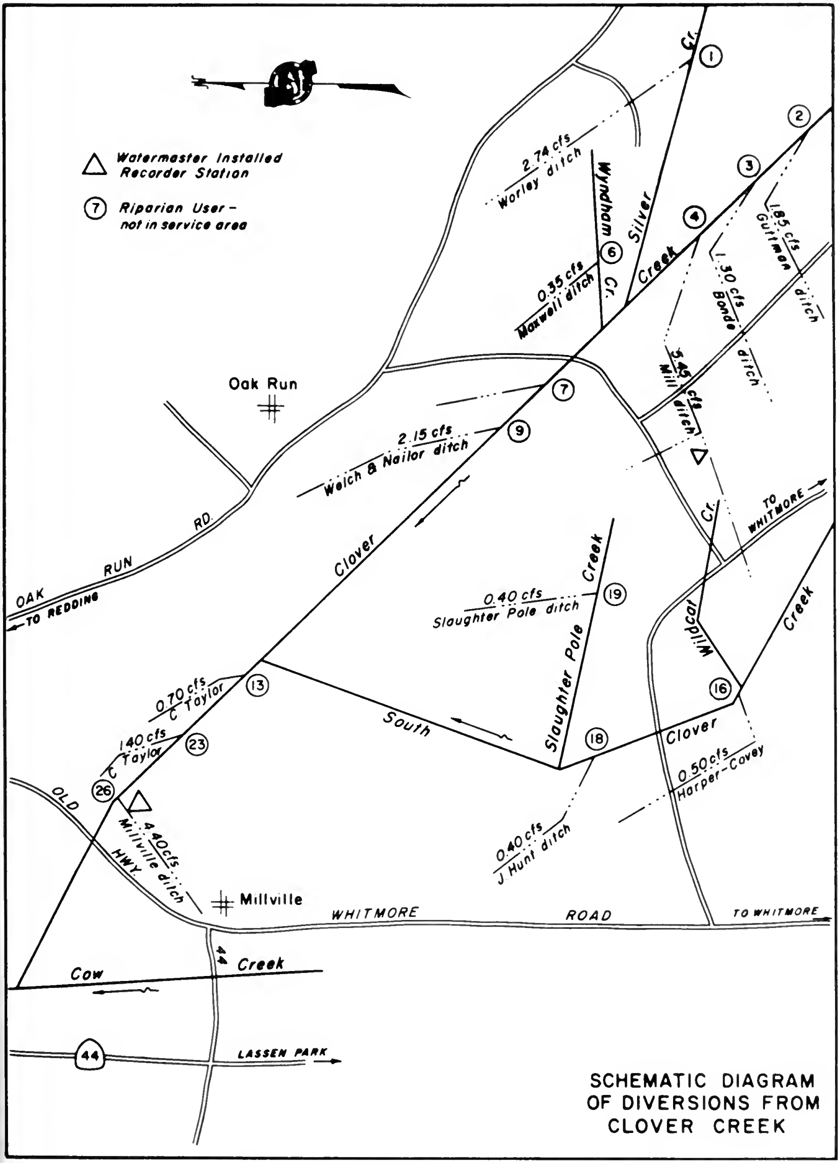
SCHEMATIC DIAGRAM
OF COW CREEK
WATERMASTER SERVICE AREA



SCHEMATIC DIAGRAM OF DIVERSIONS FROM NORTH COW CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM OAK RUN CREEK



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
CLOVER CREEK

Digger Creek Watermaster Service Area

The Digger Creek service area is located in southeastern Shasta County and northeastern Tehama County. There are 38 water right owners in the area with total allotments of 23.225 cubic feet per second.

Digger Creek forms a portion of the boundary line between Shasta and Tehama Counties. It drains an area of approximately 45 square miles on the western slopes of mountains situated immediately west of Lassen National Park. The creek flows in a westerly direction through the town of Manton to its confluence with North Fork Battle Creek. Manton, the only community in the area, is located approximately 40 miles northeast of Red Bluff.

A schematic drawing of the Digger Creek stream system is presented as Figure 7, page 39.

Water Supply

Precipitation, occurring principally in the winter months, is typical of Northern California foothill areas. Snowmelt contributes to the early runoff but the summer streamflow is primarily from springs. In average runoff years there is sufficient flow in Digger Creek, with careful regulation, to satisfy all decreed allotments throughout the entire irrigation season. However, serious deficiencies occur in dry years.

The estimated daily mean discharge of Digger Creek below South Fork Branch is presented in Table 13, page 38.

Method of Distribution

There are four court decrees (see Table 1) on Digger Creek. These decrees, in effect, have divided the water rights on the creek into two groups, the upper users and the lower users. The three upper users irrigate lands adjoining the stream so that all water not consumptively used returns to Digger Creek. The lower users are located within a five-square-mile area. Very little runoff from the lower users returns to the creek.

The three upper users' water rights are absolute and not correlative to the lower users; therefore, allotments are not cut proportionally as Digger Creek flows decrease. Since the lower users have to stand all deficiencies, their allotments are cut proportionally as the flow decreases. In effect, the upper users have first priority allotments and the lower users have second priority allotments.

Irrigation is accomplished principally by wild flooding, although border checks and sprinklers are used on a few fields. Small diversion dams are placed in the stream channel to divert water into ditches for conveyance to the fields.

1971 Distribution

Watermaster service began July 1 in the Digger Creek service area and continued until September 30. Ross P. Rogers, Water Resources Engineering Associate, was watermaster during this period.

The available water supply in Digger Creek was outstanding. During the usually critical months of August and September all water users received 100 percent or more of their allotments. In addition, surplus quantities ranging from 10 to 25 percent of the total adjudicated water rights flowed unused from the service area.

DIGGER CREEK WATERMASTER SERVICE AREA

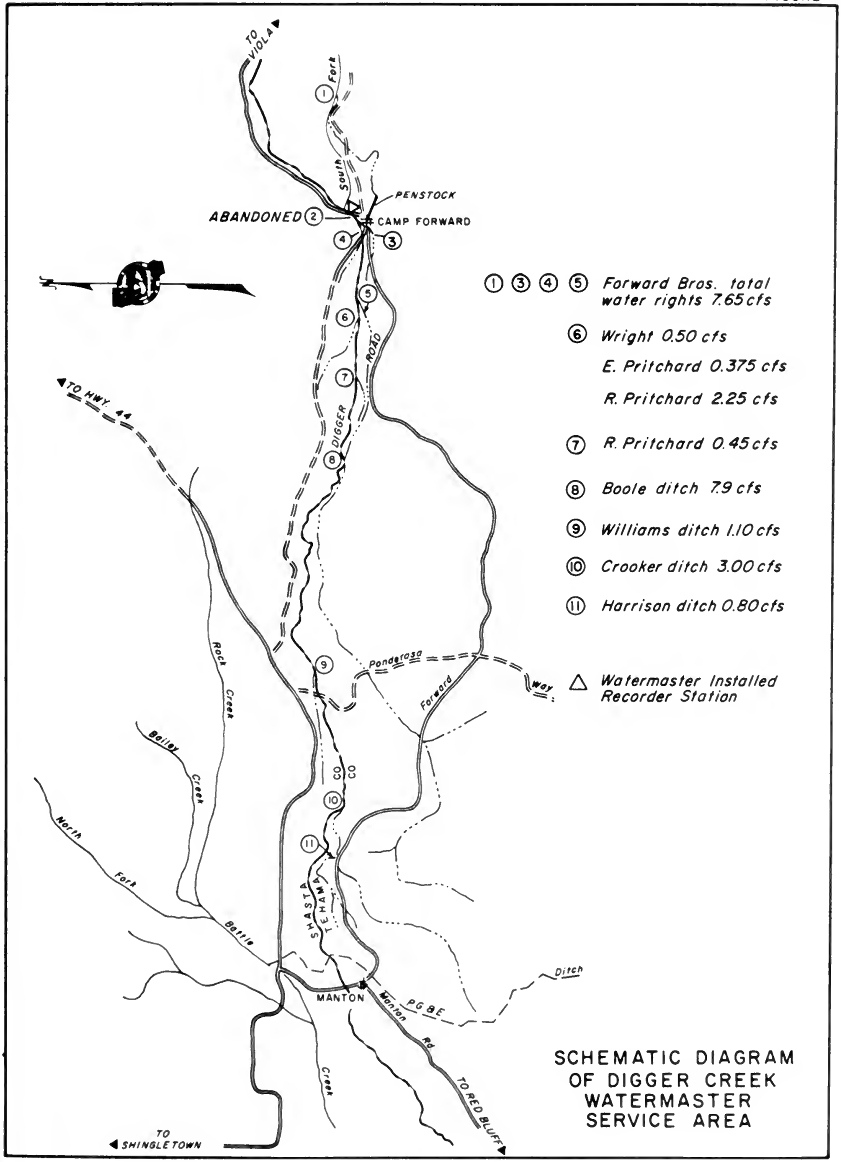
1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 13

DIGGER CREEK BELOW SOUTH FORK BRANCH

Day	March	April	May	June	July	August	September	Day
1					40E	30*	24	1
2					40E	29	24	2
3					40E	29	24	3
4					40E	29	23	4
5					40E	29	23	5
6					40E	29	23	6
7					40E	29	23	7
8					40E	29	23	8
9					40E	29	22	9
10					40E	29	22	10
11					40E	28	22	11
12					35E	28	21	12
13					35E	28	21	13
14					35E	28	21	14
15					35E	28	21	15
16					35E	28	21	16
17					35E	27	20	17
18					35E	27	20	18
19					35E	26	20	19
20					35E	26	20	20
21					35E	26	20	21
22					30E	26	20	22
23					30E	26	20	23
24					30E	25	20	24
25					30E	25	21	25
26					30E	25	23	26
27					30E	25	23	27
28					30E	25	22	28
29					30E	25	24	29
30					30E	24	23	30
31					30E	24		31
Mean					35E	27.1	21.8	Mean
Runoff In Acre-Feet					2160E	1670	1300	Runoff In Acre-Feet

E Estimated
* Beginning of Record



SCHEMATIC DIAGRAM OF DIGGER CREEK WATERMASTER SERVICE AREA

French Creek Watermaster Service Area

The French Creek service area is located in western Siskiyou County near the town of Etna in Scott Valley. There are 27 water right owners in the service area with total allotments of 30.59 cubic feet per second. The major sources of water supply are French Creek, Miners Creek, and North Fork French Creek. French Creek flows in a northeasterly direction through the central part of the service area. Miners Creek begins east of the headwaters of French Creek and flows in a northerly direction, joining French Creek about 3 miles above its confluence with Scott River. North Fork French Creek begins north of the headwaters of French Creek and flows easterly, joining French Creek one mile upstream from the confluence with Miners Creek.

The service area encompasses the entire agricultural area within the French Creek Basin, and some additional lands along the west side of the Scott River near the town of Etna. The service area is about one-half mile wide and five miles long, with the main axis and drainage running from south to north. Elevations of the agricultural area range from about 3,200 feet at the south to about 2,800 feet at the confluence of French Creek and Scott River.

A schematic drawing of the French Creek stream system is presented as Figure 8, page 43.

Water Supply

The water supply is derived from snowmelt runoff, springs and seepage, and occasional summer thundershowers.

The watershed of French Creek contains about 32 square miles of heavily forested, steep, mountainous terrain of the easterly slopes of the Salmon Mountains. It varies in elevation from about 7,200 feet along its west rim to about 3,200 feet at the foot of the slopes bordering French Creek Valley. Snowmelt runoff is normally sufficient to supply all demands until about the middle of July. The daily mean discharge of Duck Lake Creek, a tributary, is presented in Table 14, page 40.

Method of Distribution

Irrigation is accomplished primarily by wild flooding of permanent pasture and alfalfa fields. Water is conveyed by ditches and laterals to the place of use.

The French Creek decree (see Table 1) provides three separate areas of distribution within the service area and establishes the following number of priority classes for these areas: French Creek, including Horse Range Creek, Paynes Lake Creek, and Duck Lake Creek - seven; Miners Creek - three; North Fork French Creek - three.

1971 Distribution

Watermaster service began in the French Creek service area on July 1 and continued until September 30. John A. Nolan, Water Resources Technician II, was watermaster during this period.

Because watermaster service was initiated during the 1969 season, little data is available for a water supply comparison with past years. However, it is the opinion of most ranchers in the area that an above-average water year condition prevailed.

Upper third priority allotments were shut off on August 11 to satisfy the upper second priority rights. However, downstream third priority allotments were available throughout the remainder of the season in decreasing quantities.

Downstream first, second, and third priority allotments can rely on a more

dependable water supply than those of the upper users due to inflow from Paynes Lake Creek, Horse Range Creek, and North Fork French Creek, all tributaries to French Creek below the upper users.

FRENCH CREEK WATERMASTER SERVICE AREA

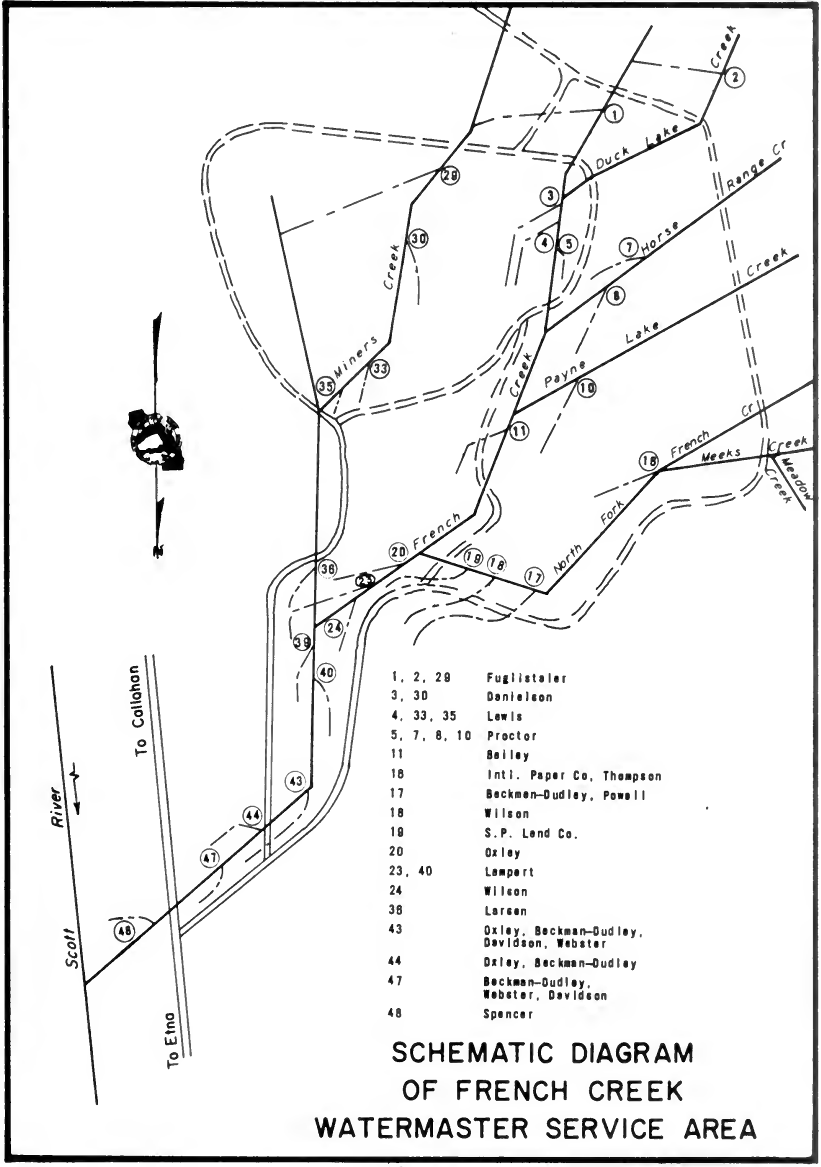
1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 14

DUCK LAKE CREEK TRIBUTARY TO FRENCH CREEK

Day	March	April	May	June	July	August	September	Day
1				21	17	6.4	2.8	1
2				21	16	6.2	2.8	2
3				23	15	6.2	2.8	3
4				25	15	6.0	2.6	4
5			17*	27	14	5.8	2.5	5
6			16	28	14	5.8	2.6	6
7			18	31	13	5.8	2.6	7
8			25	31	13	5.5	2.5	8
9			24	30	13	5.3	2.5	9
10			25	32	12	5.1	2.3	10
11			28	30	12	4.9	2.3	11
12			31	29	11	4.9	2.2	12
13			30	29	11	4.6	2.2	13
14			27	28	11	4.2	2.2	14
15			27	28	11	3.8	2.2	15
16			24	29	10	3.4	2.2	16
17			21	29	10	3.0	2.2	17
18			20	30	10	3.0	2.2	18
19			22	29	9.6	3.0	2.2	19
20			22	29	11	2.8	2.0	20
21			20	28	11	2.8	2.0	21
22			20	28	10	2.8	2.0	22
23			24	27	9.3	2.8	2.0	23
24			28	24	8.7	2.8	1.9	24
25			30	30	8.2	2.8	2.0	25
26			28	32	8.0	2.6	2.3	26
27			25	24	7.4	2.6	2.2	27
28			30	20	7.4	2.6	2.3	28
29			32	18	6.9	2.5	3.0	29
30			28	17	6.9	2.8	2.5	30
31			23		6.6	3.1		31
Mean			24.6	26.9	10.9	4.1	2.3	Mean
Runoff In Acre-Feet			1320	1600	672	250	139	Runoff In Acre-Feet

* Beginning of Record



1, 2, 29	Fuglistaler
3, 30	Danielson
4, 33, 35	Lewis
5, 7, 8, 10	Proctor
11	Bailey
16	Intl. Paper Co, Thompson
17	Beckmen-Dudley, Powell
18	Wilson
19	S.P. Land Co.
20	Oxley
23, 40	Lampert
24	Wilson
36	Larsen
43	Oxley, Beckman-Dudley, Davidson, Webster
44	Oxley, Beckman-Dudley
47	Beckman-Dudley, Webster, Davidson
48	Spencer

SCHEMATIC DIAGRAM
OF FRENCH CREEK
WATERMASTER SERVICE AREA

Hat Creek Watermaster Service Area

The Hat Creek service area is located in the eastern part of Shasta County north of Lassen Volcanic National Park. There are 48 water right owners in the area with total allotments of 135.545 cubic feet per second. Hat Creek, which flows in a northerly direction through the area, is the only source of water supply in the service area. The place of use is Hat Creek Valley, which is approximately 20 miles long and two miles wide. The valley extends northward from a point about three miles south of the town of Old Station, to the confluence of Rising River and Hat Creek. The irrigable lands, which consist primarily of volcanic ash, are interlaced with large outcroppings of volcanic rocks.

Schematic drawings for both the upper and lower users' diversion systems from Hat Creek are presented as Figures 9 through 9b, pages 47 through 49.

Water Supply

The water supply of Hat Creek is derived from snowmelt runoff on Mount Lassen and from large springs. Snowmelt normally creates a high flow during May and June; however, the substantial portion of supply during the summer months comes from large springs which decrease only slightly in output. Only after a series of dry years does the flow of these springs fall much below 75 percent of total allotments.

A record of the daily mean discharge of Hat Creek near the town of Hat Creek is presented in Table 15, page 46.

Method of Distribution

The Hat Creek decree (see Table 1) divides the water rights on Hat Creek into two groups (upper users and lower users) who use the water on 10-day rotation schedules, with one priority class for each group as the basis for distribution. Therefore, a complete reregulation of all diversions occurs every 10 days, alternating an irrigation supply to one group and a minimum flow (stockwater) to the other group.

Most irrigation in the area is accomplished by wild flooding. Large heads of water are used to cover the land rapidly, thereby preventing excessive loss from percolation in the extremely porous soil. Diversion dams constructed across the creek serve to divert water into large ditches. The fields, many of which have checks and borders, are then flooded from the main diversion ditch or from laterals. A few domestic rights are met by pumping directly from Hat Creek.

1971 Distribution

Watermaster service began May 1 in the Hat Creek service area and continued until September 30. Virgil Buechler, Water Resources Technician II, was watermaster during this period.

The available water supply for Hat Creek was extremely good. The snowpack on Lassen Peak was normal. The springs tributary to Hat Creek were flowing above normal. The high spring flows continued through the summer. The flow in Hat Creek near Old Station was in excess of 152 cubic feet per second throughout the summer.

The usual 10-day rotation schedule was not initiated until July 30. During this rotation, the lower users were regulated to 100 percent of their allotments (one priority). The flows in Hat Creek then remained between 177 and 152 cubic feet per second. This resulted in a close regulation every 10 days, but the regulations were always on a 100 percent basis.

Special Occurrences

A Parshall flume was constructed on Doug Burnett's ditch.

One watermaster recorder installed on Indian property was destroyed by vandals.

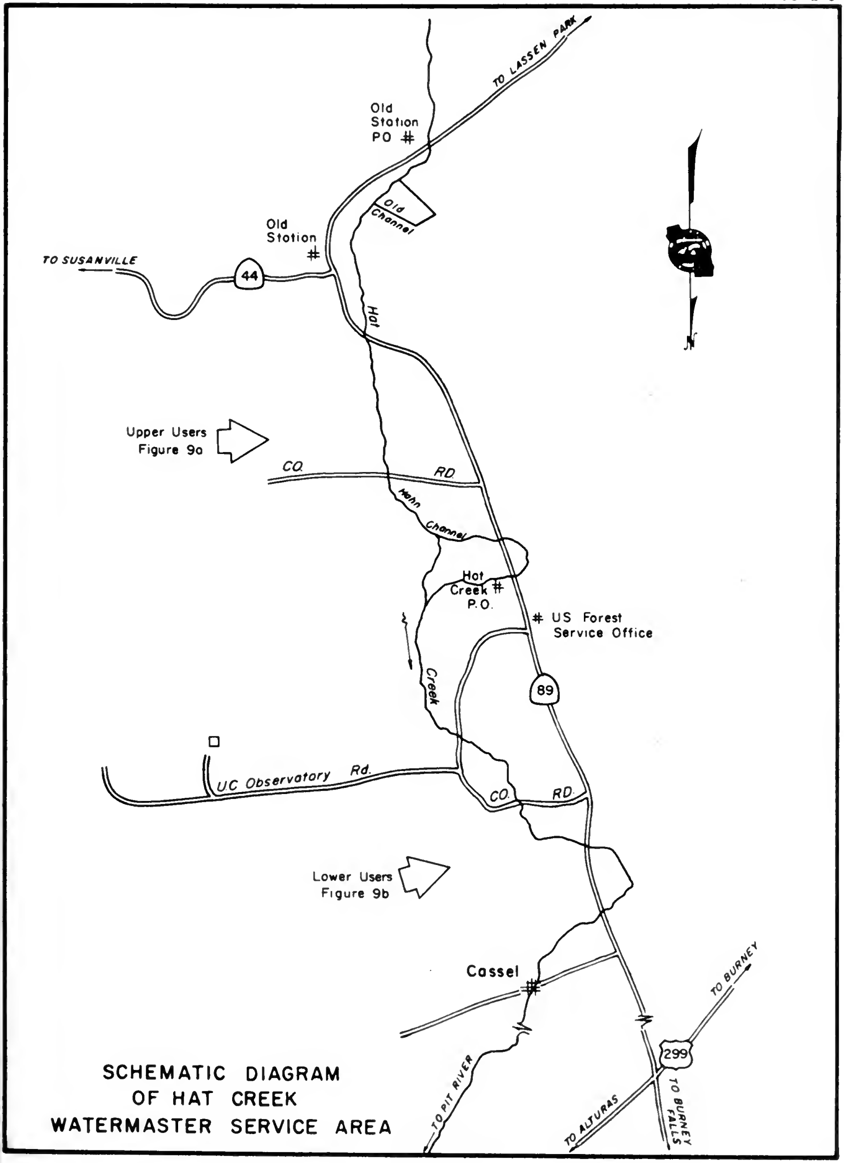
HAT CREEK WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

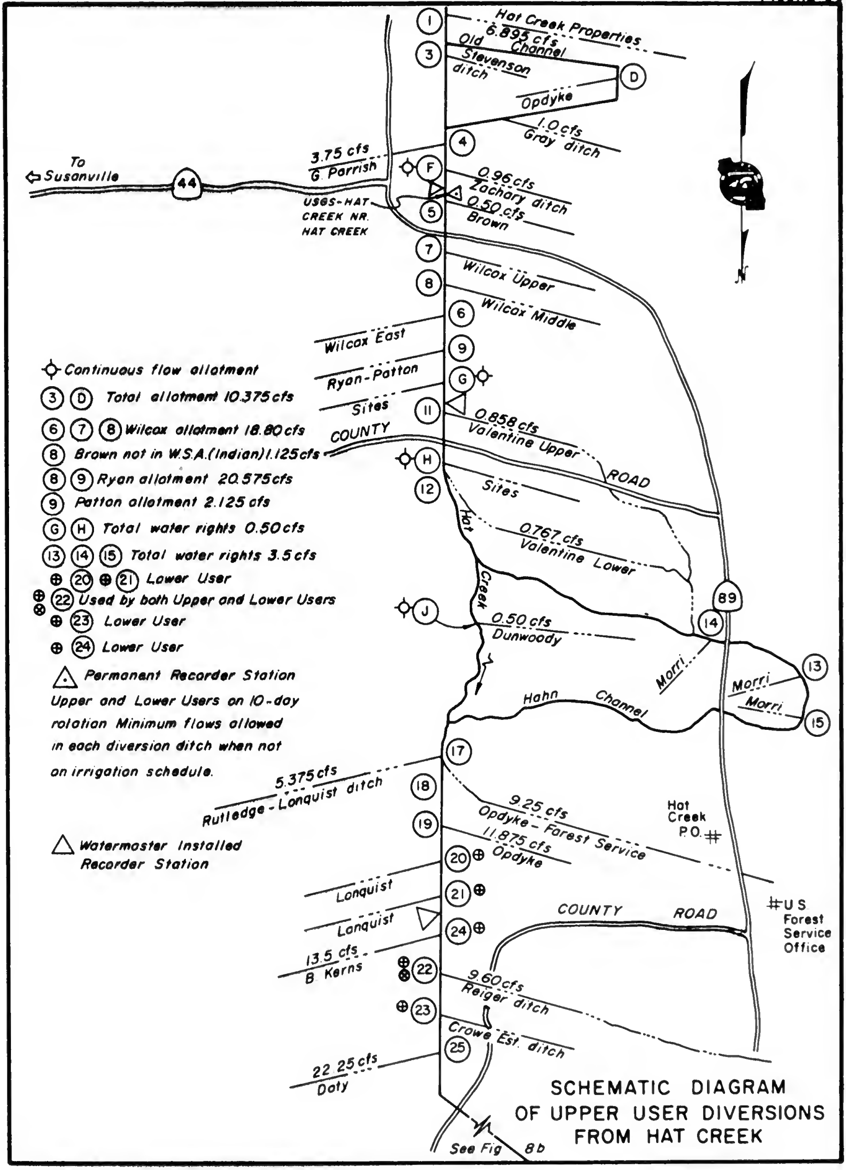
TABLE 15

HAT CREEK NEAR HAT CREEK

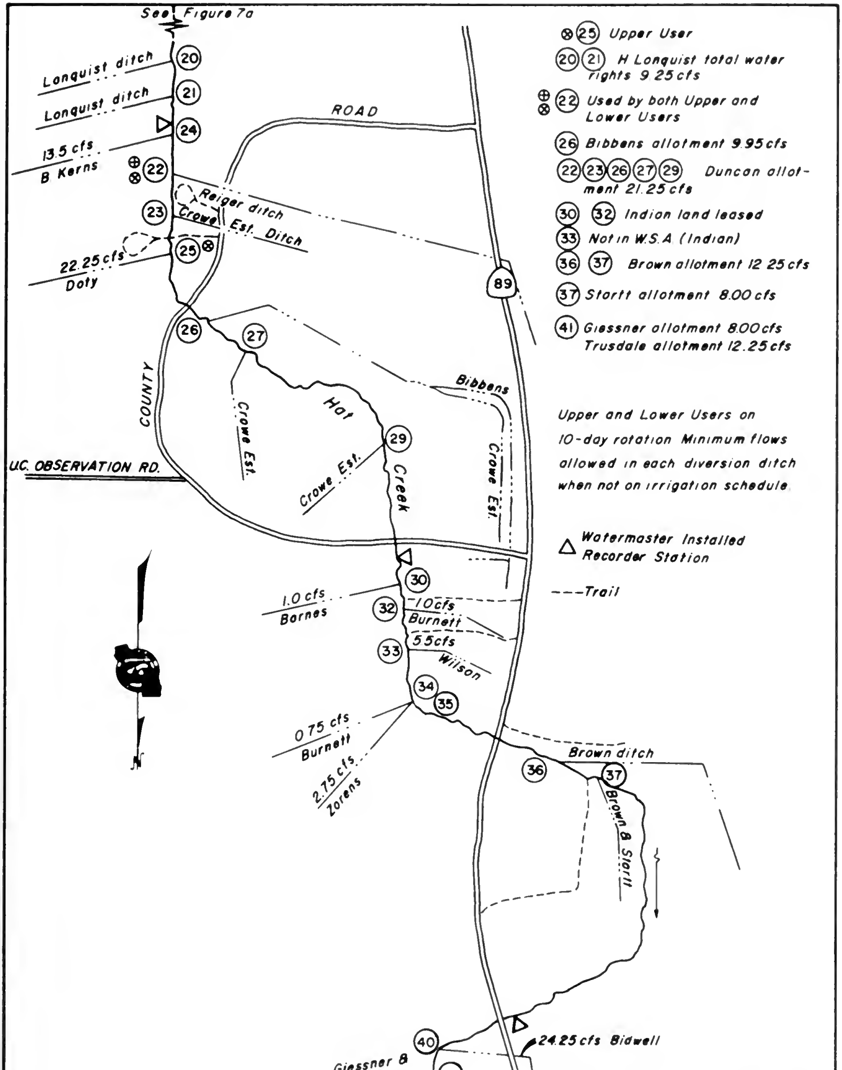
Day	March	April	May	June	July	August	September	Day
1	155	171	181	228	237	177	155	1
2	157	171	180	219	235	177	154	2
3	162	171	181	212	230	177	155	3
4	159	170	184	220	225	176	155	4
5	155	172	194	227	222	178	155	5
6	158	175	190	237	219	175	155	6
7	158	175	191	249	214	175	160	7
8	157	172	203	262	211	174	166	8
9	155	174	200	268	209	183	166	9
10	155	175	212	264	208	158	164	10
11	155	171	223	270	200	158	164	11
12	167	170	235	268	194	158	164	12
13	159	171	249	264	193	159	163	13
14	158	172	247	268	190	159	164	14
15	157	175	244	271	188	159	163	15
16	157	177	237	279	188	160	163	16
17	155	180	222	281	190	162	163	17
18	155	177	217	270	194	159	163	18
19	155	175	223	275	193	166	159	19
20	157	178	230	281	191	170	152	20
21	157	174	228	273	186	168	152	21
22	159	172	214	277	183	168	152	22
23	188	171	230	277	181	168	152	23
24	183	171	251	258	179	168	153	24
25	179	171	271	258	177	170	153	25
26	196	171	290	356	176	170	166	26
27	177	171	271	312	175	170	168	27
28	175	174	288	268	174	167	167	28
29	174	176	258	246	172	154	170	29
30	175	181	255	240	176	154	170	30
31	172		232		177	154		31
Mean	164	173	227	263	196	166	160	Mean
Runoff In Acre-Feet	10080	10320	13950	15620	12070	10210	9530	Runoff In Acre-Feet



SCHEMATIC DIAGRAM
OF HAT CREEK
WATERMASTER SERVICE AREA



SCHEMATIC DIAGRAM OF UPPER USER DIVERSIONS FROM HAT CREEK



SCHEMATIC DIAGRAM OF LOWER USER DIVERSIONS FROM HAT CREEK

Indian Creek Watermaster Service Area

The Indian Creek service area is located in the north central part of Plumas County in the vicinity of the town of Greenville. There are 45 water right owners in the service area with total allotments of 97.015 cubic feet per second. The major sources of supply in the service area are Indian Creek and two major tributaries, Wolf Creek and Lights Creek. Indian Creek and its minor tributaries rise in the mountains east of the service area. It then flows through Gennessee Valley and through Indian Valley past the towns of Taylorsville and Crescent Mills to its confluence with the North Fork Feather River. Indian Creek is joined from the north by Lights Creek and Wolf Creek in the northwest part of the valley. The major place of use is in Indian Valley, which is about four miles long and two and one-half miles wide. The average elevation is about 3,500 feet.

A schematic drawing of each major stream system within the Indian Creek service area is presented as Figures 10 through 10c, pages 53 through 56.

Water Supply

The water supply in the Indian Creek service area is derived primarily from snowmelt runoff with springs and seepage maintaining some late summer flow. The flow of Wolf Creek is normally sufficient to supply all allotments until June 1, while Indian and Lights Creeks, with the exception of some tributaries, have sufficient flow to supply all allotments until July 1. After these dates, the flow steadily decreases throughout the season until by the end of August only a small portion of allotments is available.

A record of the daily mean discharge of Indian Creek near Taylorsville is presented in Table 16, page 52.

Method of Distribution

The basic method of irrigation in Indian Valley is wild flooding. Small diversion dams are placed in the stream channels to divert the water into distribution ditches for conveyance to the fields. Small check dams, located throughout the fields in swales, help to spread the water over the ground. There is a limited amount of check and border irrigation in the valley. A few sprinkling systems are also in use.

The Indian Creek decree (see Table 1) establishes three priority classes for each of the major stream systems within the Indian Creek service area.

1971 Distribution

Watermaster service began in the Indian Creek service area on April 22 and continued until September 30 with Harvey M. Jorgensen, Water Resources Engineering Associate, as watermaster.

The available supply in the service area was above average during the season.

Wolf Creek. The available water supply of Wolf Creek was sufficient to satisfy all allotments (three priorities) until August 30. The streamflow gradually decreased until only first priority allotments were being served on September 15.

Lights Creek and Tributaries. The available water supply of Lights Creek was sufficient to satisfy all allotments (three priorities) until September 10. Surface flow continued throughout the season. The available water supply of Cooks Creek satisfied all allotments until August 30.

Indian Creek. The available water supply of Indian Creek was sufficient to satisfy all allotments (three priorities) until July 6. On this date the drainage of

Antelope Lake was started and the flow of Indian Creek increased by more than 100 cubic feet per second until October 13, when the outflow from Antelope Dam was reduced to zero. This condition afforded excellent irrigation water for the water users on Indian Creek.

Special Occurrences

Because of the above-average water supply, it was not necessary to install orifice plate control devices in Diversion 54, an action normally required.

Divider structures were designed and constructed in the Cole, Pearce, and Neer irrigation ditches, alleviating many long-standing problems at these diversion points. Also, one divider structure, short section of ditch and road culvert crossing were eliminated.

Engineering plans and advice were rendered in the construction of a main divider structure on the Mill Race system, replacing the old structure which was sorely in need of repair.

INDIAN CREEK WATERMASTER SERVICE AREA

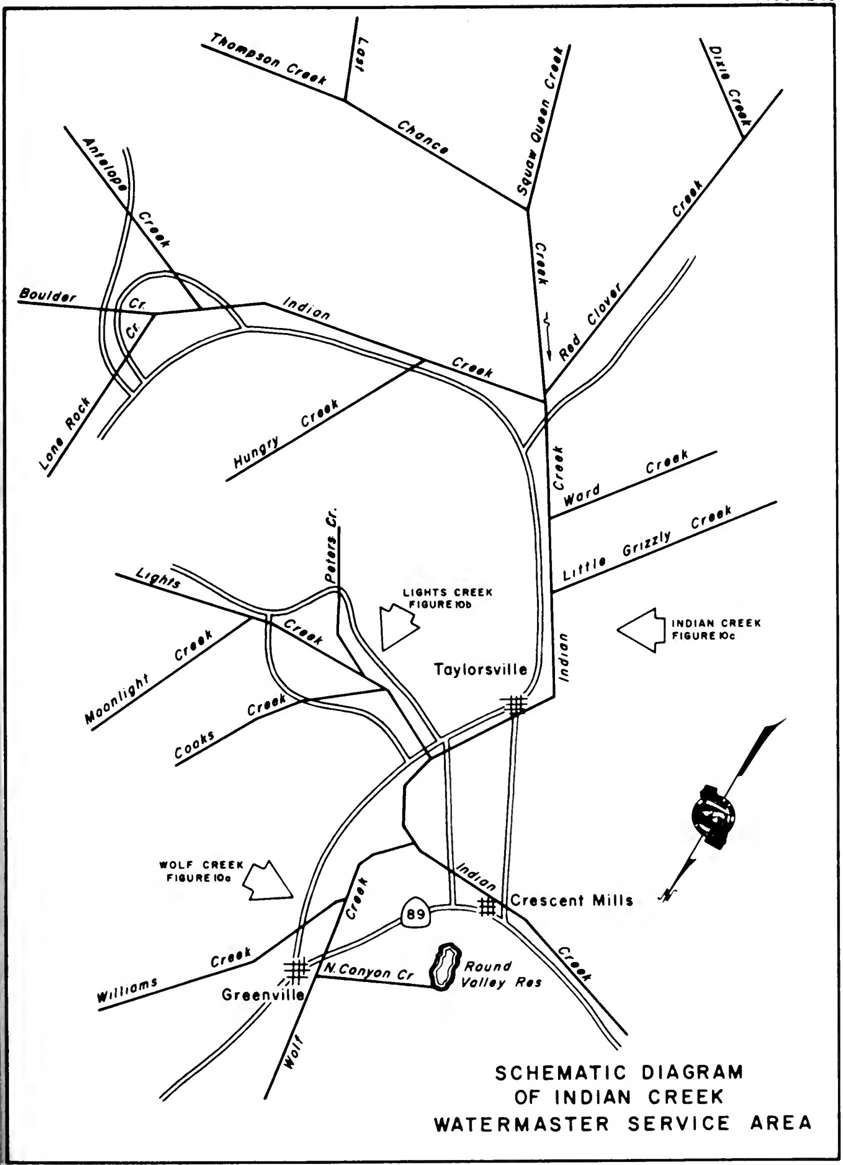
1971 Daily Mean Discharge in Cubic Feet Per Second

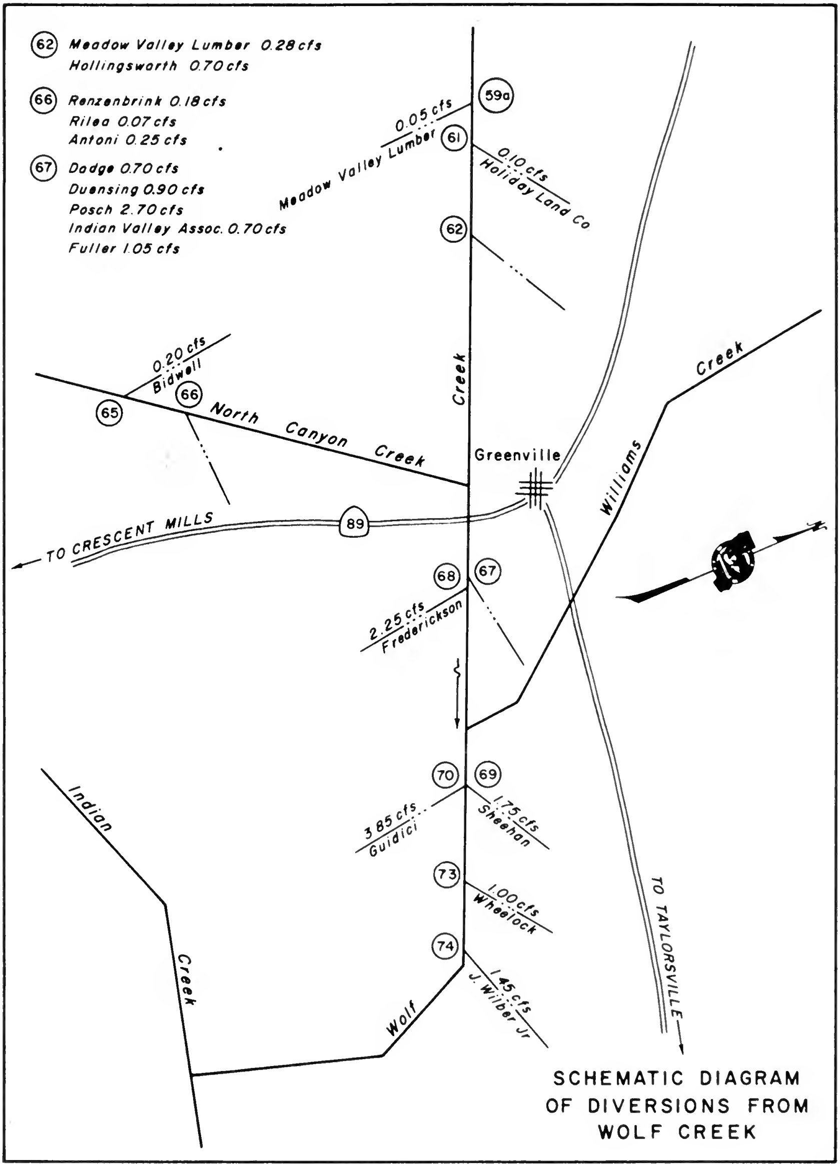
TABLE 16

INDIAN CREEK NEAR TAYLORSVILLE

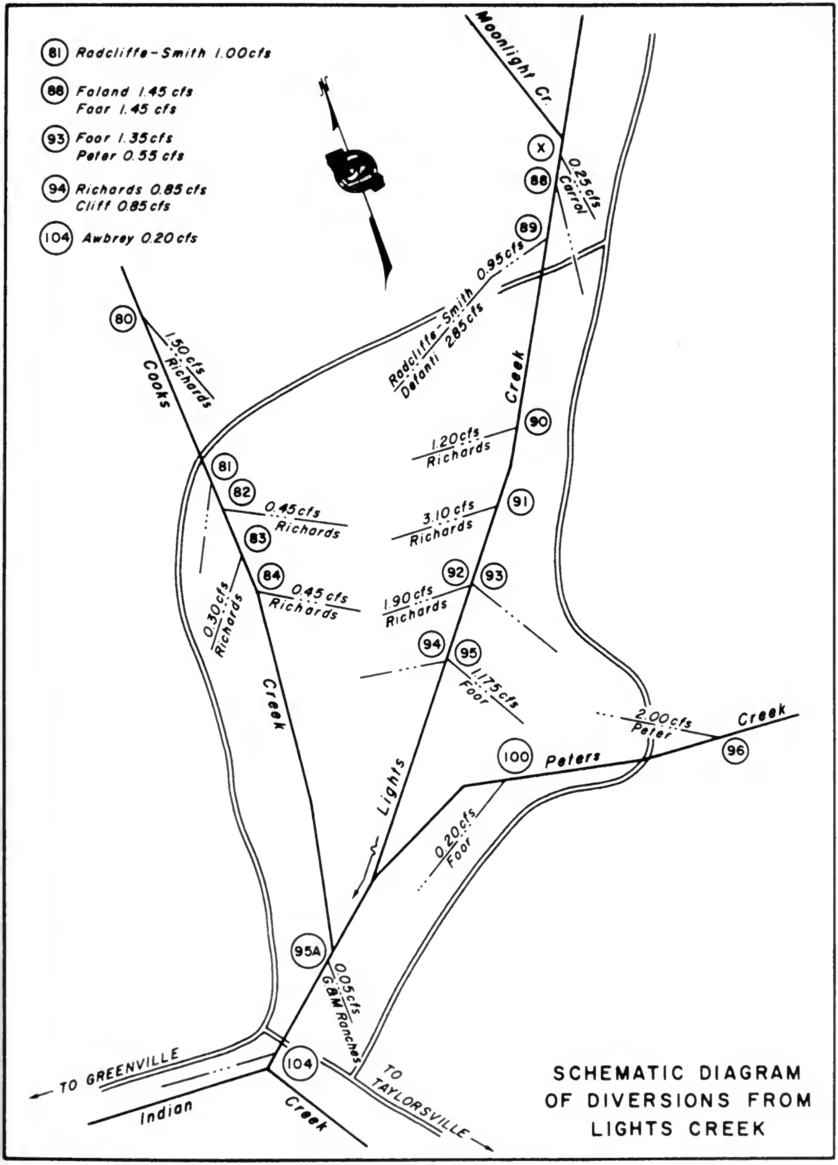
Day	March	April	May	June	July	August	September	Day
1	273	1860	1580	2360	484	214	163	1
2	245	1870	1640	2240	460	207	157	2
3	277	1910	2080	2200	397	202	157	3
4	286	1990	2600	2020	338	198	157	4
5	272	2100	2520	2120	326	193	157	5
6	255	2310	2230	1900	326	191	154	6
7	262	2250	2050	1800	370	186	157	7
8	261	1960	2540	1720	342	184	157	8
9	261	2060	2390	1640	329	184	157	9
10	268	2550	2270	1540	322	180	155	10
11	278	1970	2300	1460	314	180	158	11
12	806	1840	2660	1370	306	177	158	12
13	1040	1890	2480	1290	295	175	157	13
14	804	1870	2330	1200	288	171	155	14
15	645	2020	2200	1140	284	170	152	15
16	579	2040	2080	1100	273	168	152	16
17	617	2090	1820	1060	267	168	152	17
18	539	1810	1620	984	280	166	149	18
19	508	1540	1510	914	276	168	149	19
20	548	1490	1480	862	276	163	154	20
21	654	1390	1600	796	273	163	154	21
22	819	1230	1660	702	259	165	154	22
23	1550	1130	1910	644	248	165	150	23
24	2200	1060	1670	598	241	163	152	24
25	2160	1040	1680	547	235	165	149	25
26	4830	1450	1690	743	233	170	152	26
27	3300	1450	1670	884	227	180	152	27
28	2550	1350	1850	731	225	170	144	28
29	2380	1430	1920	613	225	166	157	29
30	2840	1490	2160	519	219	164	166	30
31	2320		2270		217	165		31
Mean	1104	1748	2014	1256	295	176	154	Mean
Runoff in Acre-Feet	67884	104013	123888	74771	18159	10867	9197	Runoff in Acre-Feet

FIGURE 10

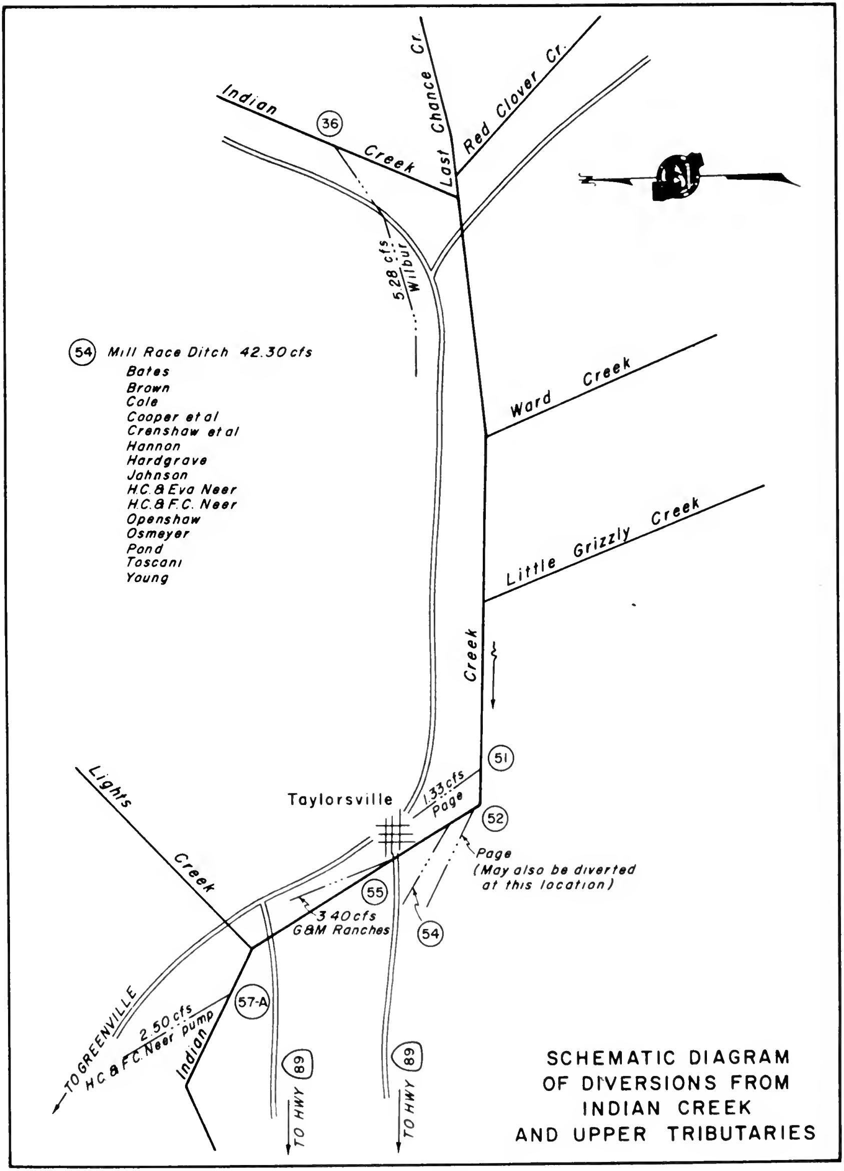

Thompson Creek
Lost
Chance
Squaw Queen Creek
Dixie Creek
Antelope
Creek
Boulder
Cr.
Cr.
Indian
Creek
Creek
Red Clover
Creek
Lone Rock
Hungry
Creek
Creek
Ward
Creek
Little Grizzly
Creek
Peters Cr.
Lights
Creek
LIGHTS CREEK
FIGURE 10b
INDIAN CREEK
FIGURE 10c
Moonlight
Creek
Taylorsville
Indian
Cooks
Creek
WOLF CREEK
FIGURE 10a
Indian
Crescent Mills
Creek
89
Williams
Creek
N. Canyon Cr
Round
Valley Res
Creek
Greenville
Wolf
SCHEMATIC DIAGRAM
OF INDIAN CREEK
WATERMASTER SERVICE AREA



SCHEMATIC DIAGRAM OF DIVERSIONS FROM WOLF CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM LIGHTS CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM INDIAN CREEK AND UPPER TRIBUTARIES

Middle Fork Feather River Watermaster Service Area

The Middle Fork Feather River service area is located in the plateau area on the west slope of the Sierra Nevada Mountains in the eastern portions of Sierra and Plumas Counties. There are 96 water right owners with total allotments of 371.565 cubic feet per second.

Major sources of supply for this service area are the Middle Fork Feather River and its tributaries in the Sierra Valley. The area is comprised of five major stream groups. These groups, starting in the northeast corner of the valley and proceeding in a southerly and westerly direction, are Little Last Chance Creek, Smithneck Creek, Webber Creek and tributaries, West Side Canal, and Fletcher Creek and Spring Channels. The Middle Fork Feather River flows generally north for approximately 20 miles through Sierra Valley. It then flows out of the valley in a westerly direction near Beckwourth. The major place of use is in Sierra Valley, which is about 15 miles long and 10 miles wide. The average elevation of the valley floor is 4,900 feet.

A schematic drawing of the Middle Fork Feather River service area is presented as Figure 11, page 60.

Water Supply

The major water supply in the Middle Fork Feather River service area is derived from snowmelt runoff, with minor flow from springs and from supplemental stored and foreign water.

Natural flows of Little Last Chance Creek are supplemented by reservoir storage provided by Frenchman Dam which was constructed by the Department of Water Resources in 1961. Stored water is released and used as needed under the provisions of an annual contract. Smithneck Creek flow is normally sufficient to supply all allotments until about the middle of May. It then decreases until about June 1. Only first and second priority allotments are then available for the remainder of the season.

The natural flow of Webber Creek is normally sufficient to supply all allotments until the middle of May. At that time up to 60 cubic feet per second is diverted from Little Truckee River to supplement the flow. This imported water is diverted through the Little Truckee Ditch into Onion Creek and then into Webber Creek via Cold Stream for use of shareholders in the Sierra Valley Water Company. This supplemental supply decreases rapidly during July, producing only a small quantity during the latter part of the season. The West Side Canal streams normally supply all allotments until the first part of June. The flow then gradually declines throughout the season.

The flow of Fletcher Creek and Spring Channels normally supplies all allotments until July 1. The flow then gradually declines for the remainder of the season.

Records of the daily mean discharge of several stream gaging stations in the Middle Fork Feather River service area are presented in Tables 17 and 18, page 59.

Method of Distribution

Wild flooding is employed by the majority of the water users to irrigate their fields. Small diversion dams are placed in the stream channels to divert the water into individual distribution systems. Check dams are constructed in the swales to implement flooding once the water reaches the fields.

The Middle Fork Feather River decree (see Table 1) establishes the number

or priority classes for each of the major stream systems within the Middle Fork Feather River service area as follows: Little Last Chance Creek - eight; West Side Canal Group - five; Fletcher Creek and Spring Channels - three; Sierra Valley Water Company - one; Webber Creek and tributaries - six; and Smithneck Creek - five.

1971 Distribution

Watermaster service began April 1 in the Middle Fork Feather River service area and continued until September 30. Joe Nessler, Water Resources Engineering Associate, was supervising watermaster during this period. Conrad Lahr, Water Resources Technician II, assisted as deputy watermaster.

An above-average water supply existed in the service area due to an above-normal snowpack and a late, wet spring.

Little Last Chance Creek. This was the tenth season of operation for Frenchman Dam and Reservoir. Release and distribution of water was in accordance with the annual contract between the Department of Water Resources and the Last Chance Creek Water District. Contract releases started June 21 and ended November 11. Total delivery during the season was 10,120 acre-feet. Prior to June 21, reservoir spill was sufficient to meet all demands.

Smithneck Creek. The available water supply was sufficient to satisfy all allotments (five priorities) until about June 1, when approximately 70 cubic feet per second was available at the upper diversion dam. The flow then dropped rapidly to 6 cubic feet per second by June 25 and remained at this level through the end of the season. Demand for water was less than normal on this system due to late rains and pollution of the stream by the Feather River Lumber Company which discouraged use of the water for fear of crop damage. Also, subdivision development work by the Occidental Petroleum Land Company has temporarily taken some land out of production. Channel realignment on the Middle Fork of Smithneck Creek from the Loyalton Sewer Plant Road to the Julio Genasci Ranch was accomplished this fall. This work was performed to enlarge the channel which has silted in over the past several years.

Webber Creek and Tributaries. The natural flow of Webber Creek was sufficient to supply all allotments (six priorities) until about August 1. It then decreased gradually until about 50 percent of second priority allotments were being served at the end of the season. Importation of water from the Little Truckee River was begun on June 14 to supplement the natural flow of Webber Creek to satisfy all allotments of the Sierra Valley Mutual Water Company shareholders (one priority). A total of 2,752 acre-feet of water was diverted through the Little Truckee Ditch up to September 30 at which time diversion was terminated. This diversion provided sufficient water until about August 1. A lighter than normal demand was experienced in this stream system due to damage of diversion facilities by high water during the previous winter.

West Side Canal Group. The available water supply in the West Side Canal Group, consisting of Hamlin, Miller, and Turner Creeks, was sufficient to satisfy all allotments (five priorities) until the latter part of August. Sufficient water was available to meet irrigation needs for the remainder of the season. Rotation of water wasn't necessary this season.

Fletcher Creek and Spring Channels. Ample water was available to satisfy all allotments (three priorities) through July. The demand for water was very low due to the non-use by the majority of users for various reasons.

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 17

LITTLE TRUCKEE DITCH AT HEAD

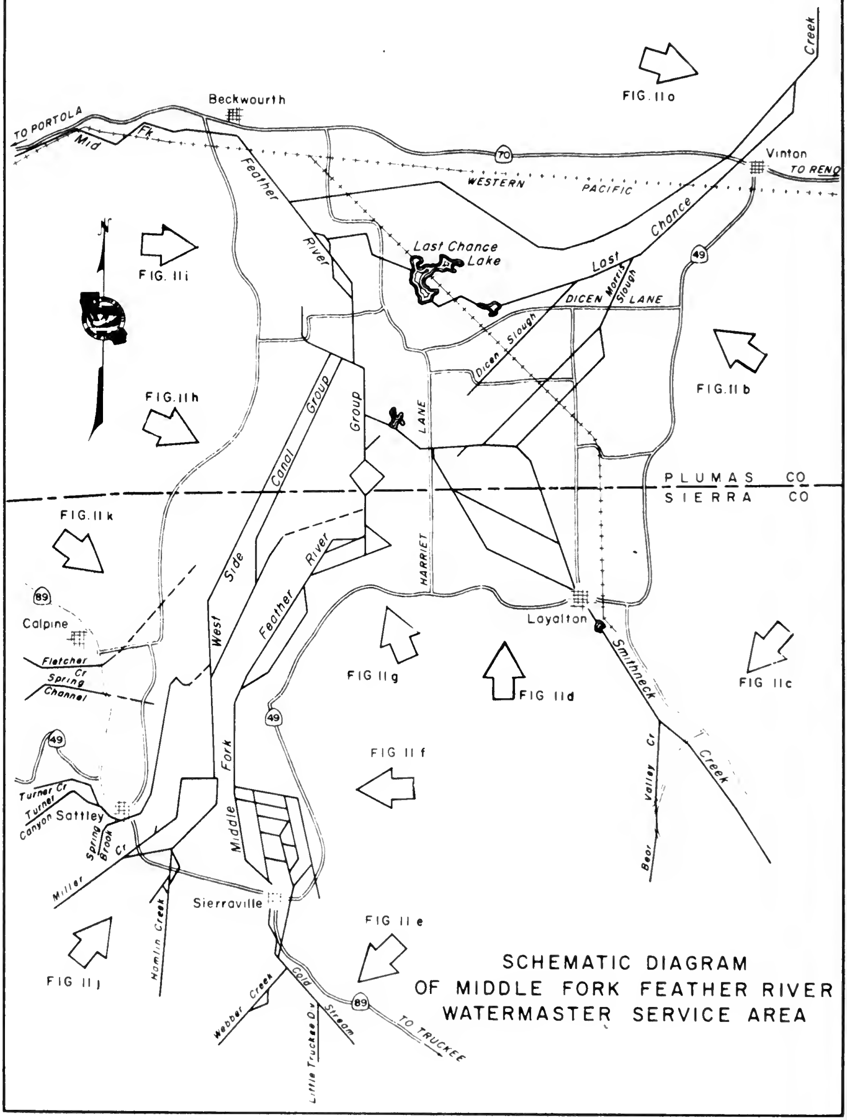
Day	March	April	May	June	July	August	September	Day
1					35	8.8	5.1	1
2					38	8.2	4.9	2
3					37	8.2	4.8	3
4					32	13	4.6	4
5					22	24	5.7	5
6					22	23	4.9	6
7					21	21	4.1	7
8					21	19	4.1	8
9					20	18	3.9	9
10					19	16	3.9	10
11					18	17	3.9	11
12					18	16	3.7	12
13					17	14	3.7	13
14				0.2*	17	13	3.0	14
15				0.4	17	11	2.4	15
16				0.4	17	10	2.4	16
17				0.4	19	9.5	2.2	17
18				0.4	20	8.8	2.2	18
19				0.4	18	8.6	2.2	19
20				0.4	17	8.2	2.4	20
21				24	16	7.6	2.4	21
22				38	14	7.3	2.4	22
23				37	14	7.0	2.4	23
24				37	13	- 6.7	2.2	24
25				39	12	7.6	2.2	25
26				41	12	7.3	2.4	26
27				40	11	7.9	2.6	27
28				38	11	6.7	2.8	28
29				35	10	5.9	3.2	29
30				34	9.5	5.4	2.8	30
31					9.2	5.1		31
Mean				21.4	18.5	11.3	3.3	Mean
Runoff In Acre-Feet				721	1140	694	197	Runoff In Acre-Feet

* Beginning of Flow

TABLE 18

MIDDLE FORK FEATHER RIVER AT PORTOLA

Day	March	April	May	June	July	August	September	Day
1	220	909	720	1110	201	44	21	1
2	210	788	739	1150	205	40	22	2
3	179	680	879	1100	202	36	21	3
4	237	619	1050	966	187	32	19	4
5	294	592	1170	832	165	30	16	5
6	325	604	1200	751	139	28	18	6
7	304	655	1150	691	127	27	19	7
8	293	758	1280	624	118	29	15	8
9	343	752	1590	544	109	29	13	9
10	400	858	1780	507	95	29	15	10
11	490	901	1580	461	85	28	15	11
12	919	915	1440	356	80	27	14	12
13	1520	911	1310	345	77	25	13	13
14	3020	955	1260	335	73	22	13	14
15	2210	921	1200	317	71	19	14	15
16	1600	918	1140	295	65	20	14	16
17	1700	952	1110	270	63	19	15	17
18	1460	988	1070	246	64	19	14	18
19	1470	975	988	217	60	17	13	19
20	1380	910	853	186	59	15	13	20
21	1450	865	800	162	60	15	13	21
22	1520	830	809	149	57	16	12	22
23	1740	783	831	141	55	22	13	23
24	2850	731	837	130	52	20	16	24
25	2100	723	797	123	50	29	16	25
26	3600	849	721	139	50	28	17	26
27	6050	906	697	182	48	28	20	27
28	3380	880	706	179	47	24	23	28
29	1770	802	735	198	45	23	23	29
30	1230	742	835	188	47	22	28	30
31	1030		1040		46	20		31
Mean	1454	822	1042	429	90.4	25.2	16.6	Mean
Runoff In Acre-Feet	89403	48936	64120	25555	5558	1551	988	Runoff In Acre-Feet



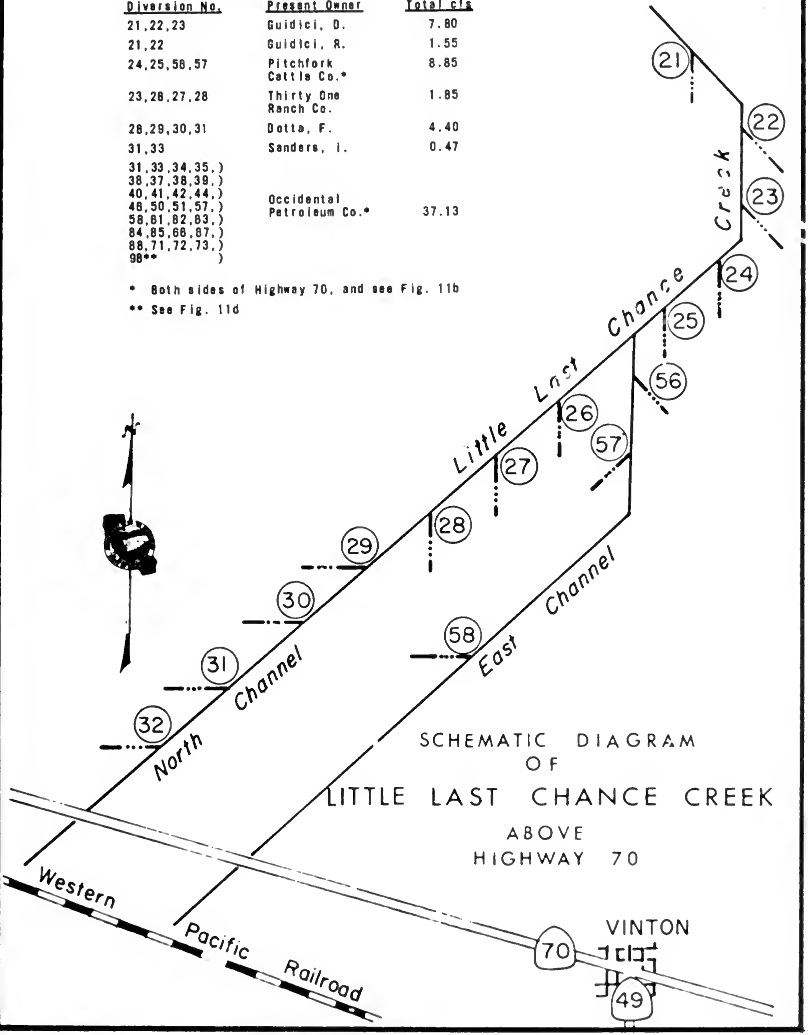
SCHEMATIC DIAGRAM
OF MIDDLE FORK FEATHER RIVER
WATERMASTER SERVICE AREA

ALLOCATIONS FROM LITTLE LAST CHANCE CREEK
ABOVE ~~HIGHWAY~~ 70

Diversion No.	Present Owner	Total cfs
21,22,23	Guidici, D.	7.80
21,22	Guidici, R.	1.55
24,25,56,57	Pitchfork Cattle Co.*	8.85
23,26,27,28	Thirty One Ranch Co.	1.85
28,29,30,31	Dotta, F.	4.40
31,33	Sanders, I.	0.47
31,33,34,35,) 36,37,38,39,) 40,41,42,44,) 46,50,51,57,) 58,61,62,63,) 64,65,66,67,) 68,71,72,73,) 98**)	Occidental Petroleum Co.*	37.13

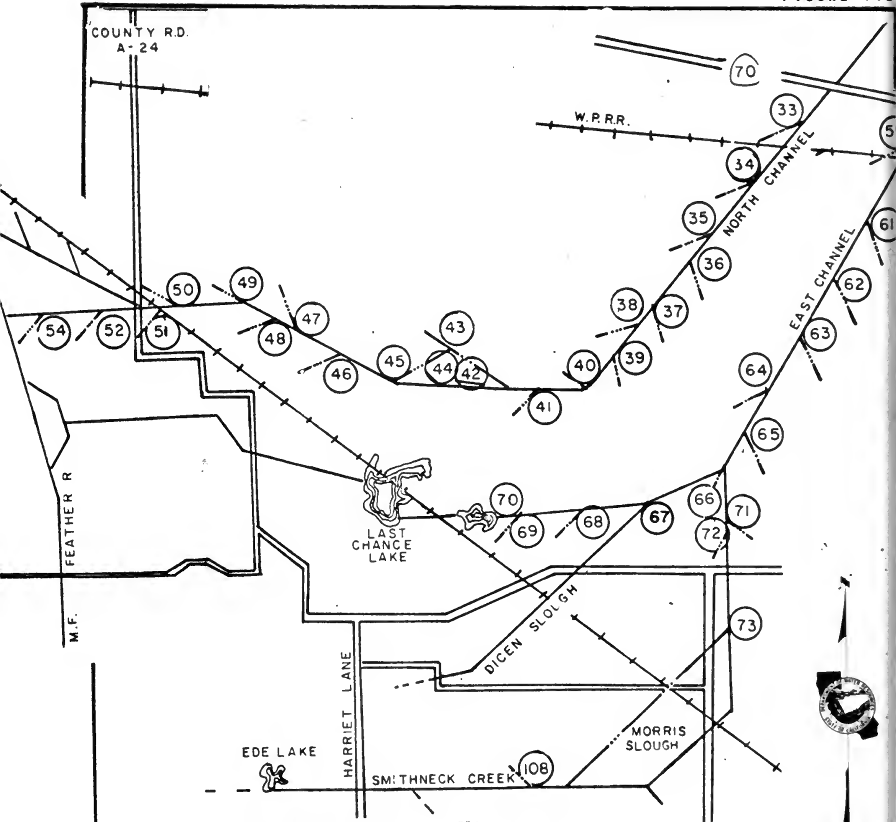
* Both sides of Highway 70, and see Fig. 11b

** See Fig. 11d



SCHEMATIC DIAGRAM
OF
LITTLE LAST CHANCE CREEK
ABOVE
HIGHWAY 70

FIGURE 11b

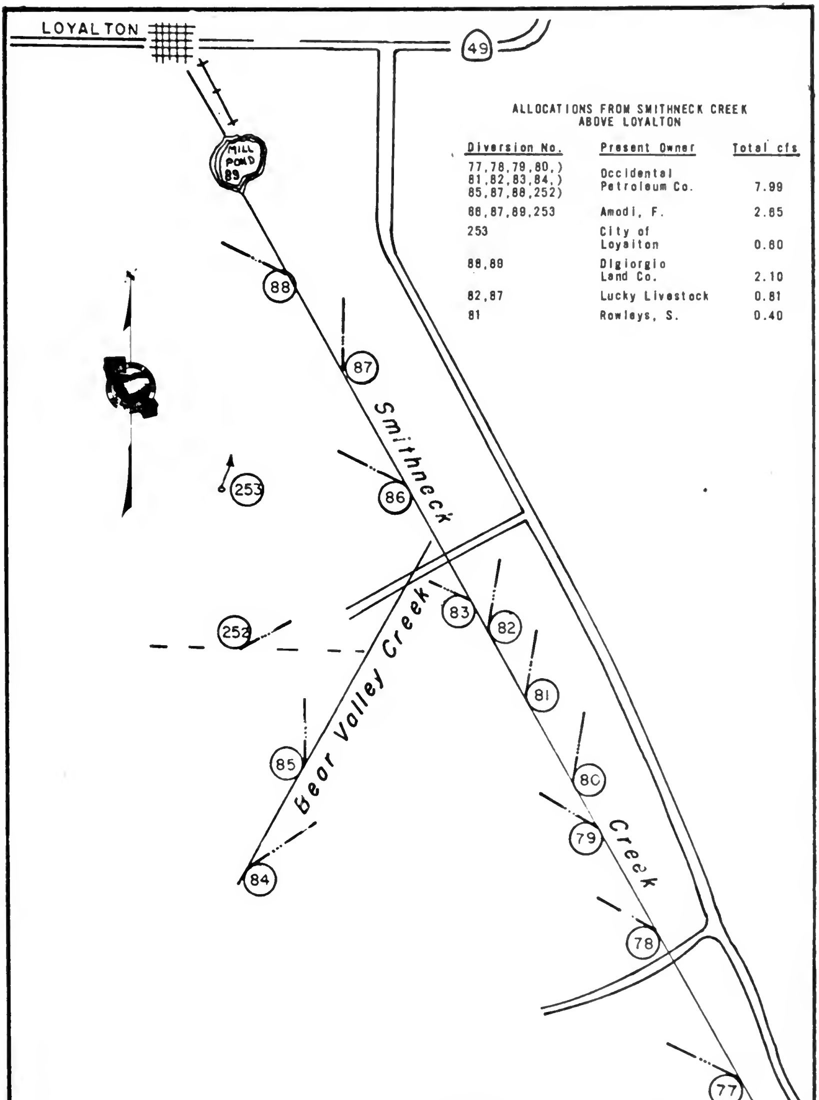


ALLOCATIONS FROM LITTLE LAST CHANCE CREEK
BELOW HIGHWAY 70

Diversion No.	Present Owner	Total cfs
31*,32*,57*, 58*,59,60	Ramalli, T.	3.30
57,58,59,80	Ayoob, G.	4.05
43,44,45,87, 88,69,72,79	Roberti, E.	9.14
70	Rammelli, M.	0.55
70	Wiley, J.	0.20
70	Carmicheal, F.	0.10
47,48,49	Bonta, S.	4.45
52,53	Maddalena, L.	1.20
54,55	Noble, P.	0.45
67,72	Humphrey, M.	1.68
87,108	Hage, J.	0.20

* See Fig. 11a for location of diversions 33-42, 48, 50, 51, 61-68, 71, 72, 73, 98 (Occidental Petroleum)

SCHEMATIC DIAGRAM
OF LITTLE LAST CHANCE CR.
BELOW HIGHWAY 70

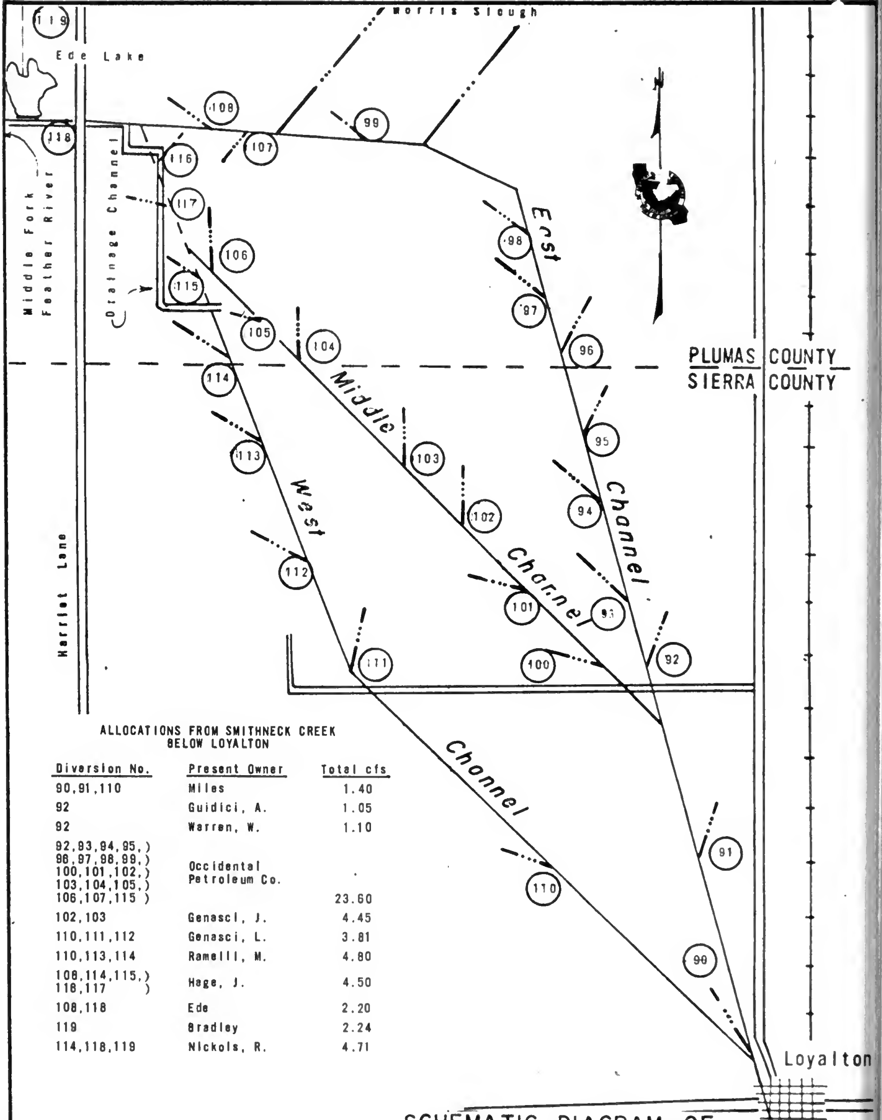


ALLOCATIONS FROM SMITHNECK CREEK ABOVE LOYALTON

Diversion No.	Present Owner	Total cfs
77,78,79,80,) 81,82,83,84,) 85,87,88,252)	Occidental Petroleum Co.	7.99
88,87,89,253	Amodi, F.	2.85
253	City of Loyalton	0.80
88,89	Digiorgio Land Co.	2.10
82,87	Lucky Livestock	0.81
81	Rowleys, S.	0.40

SCHEMATIC DIAGRAM OF SMITHNECK CREEK ABOVE LOYALTON

FIGURE 11d



ALLOCATIONS FROM SMITHNECK CREEK BELOW LOYALTON

Diversion No.	Present Owner	Total cfs
90,91,110	Miles	1.40
92	Guidici, A.	1.05
92	Warren, W.	1.10
92,93,94,95, 96,97,98,99, 100,101,102, 103,104,105, 106,107,115	Occidental Petroleum Co.	23.60
102,103	Genasci, J.	4.45
110,111,112	Genasci, L.	3.81
110,113,114	Ramelli, M.	4.80
108,114,115, 116,117	Hage, J.	4.50
108,118	Ede	2.20
119	Bradley	2.24
114,118,119	Nickols, R.	4.71

SCHEMATIC DIAGRAM OF SMITHNECK CREEK BELOW LOYALTON

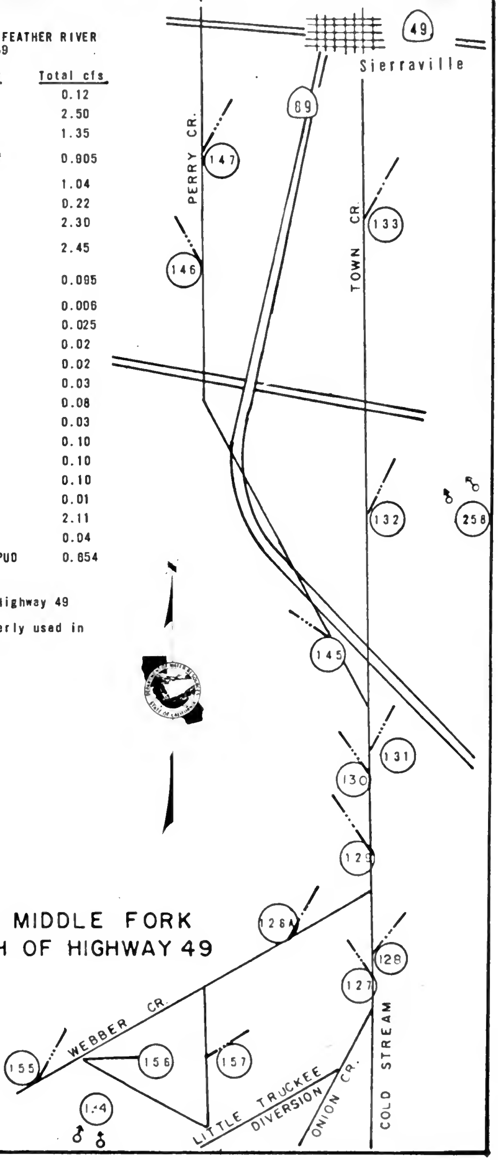
ALLOCATIONS FROM MIDDLE FORK FEATHER RIVER
SOUTH OF HIGHWAY 49

Diversion No.	Present Owner	Total cfs
127	Morgan	0.12
155	Amodei, J.	2.50
133,156,157	McKinnay	1.35
128,128A	Johnson, A. & Stodiek	0.805
133,134	Johnson, L.	1.04
134*	Johnson, S.	0.22
129*	G&M Ranches	2.30
131,132,145, 258	Pitchfork Cattle Co.	2.45
128,128A	Marin Girl Scouts	0.085
130	LaCosta, P.	0.006
130	Dellera, K.	0.025
145	Heinsen, A.	0.02
133	Goodrich, C.	0.02
134	Griffin, T.	0.03
134	Skutt, J.	0.08
134	West, H.	0.03
145	White, E.	0.10
145	Wright, I.	0.10
134	Roscoe, P.	0.10
134	Savage, H&E.	0.01
129,133**	Webber, G.	2.11
145	Scudder, N.	0.04
R. R. Springs	Sierraville PUD	0.654

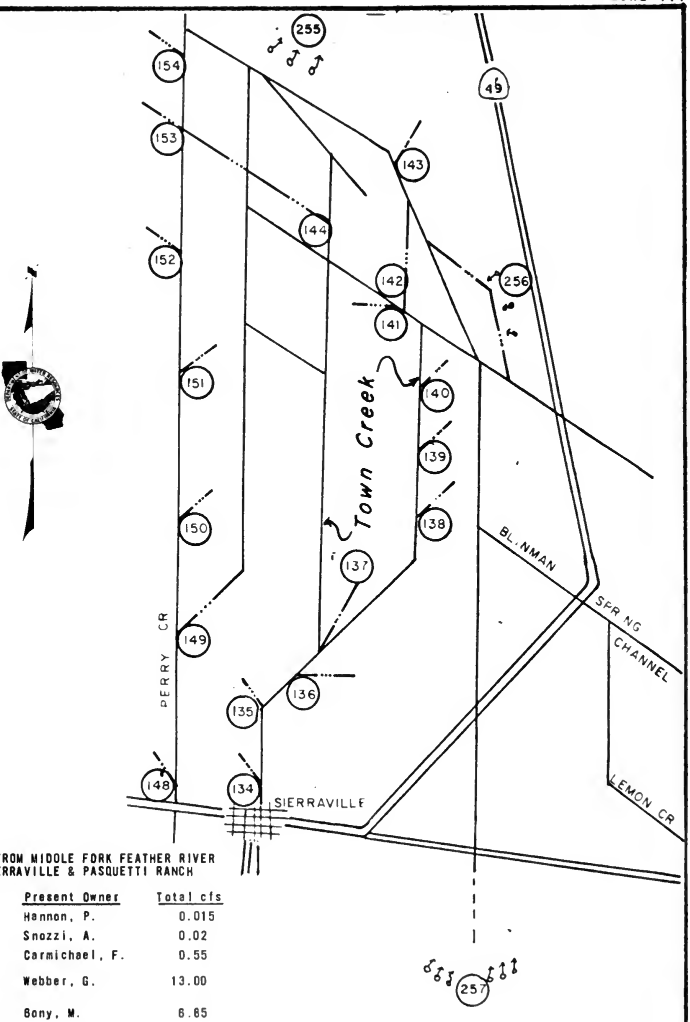
* Both sides of Highway 49

** Other allocations north of Highway 49

Rights under Div. 134, formerly used in Sierraville



SCHEMATIC DIAGRAM OF MIDDLE FORK FEATHER RIVER SOUTH OF HIGHWAY 49

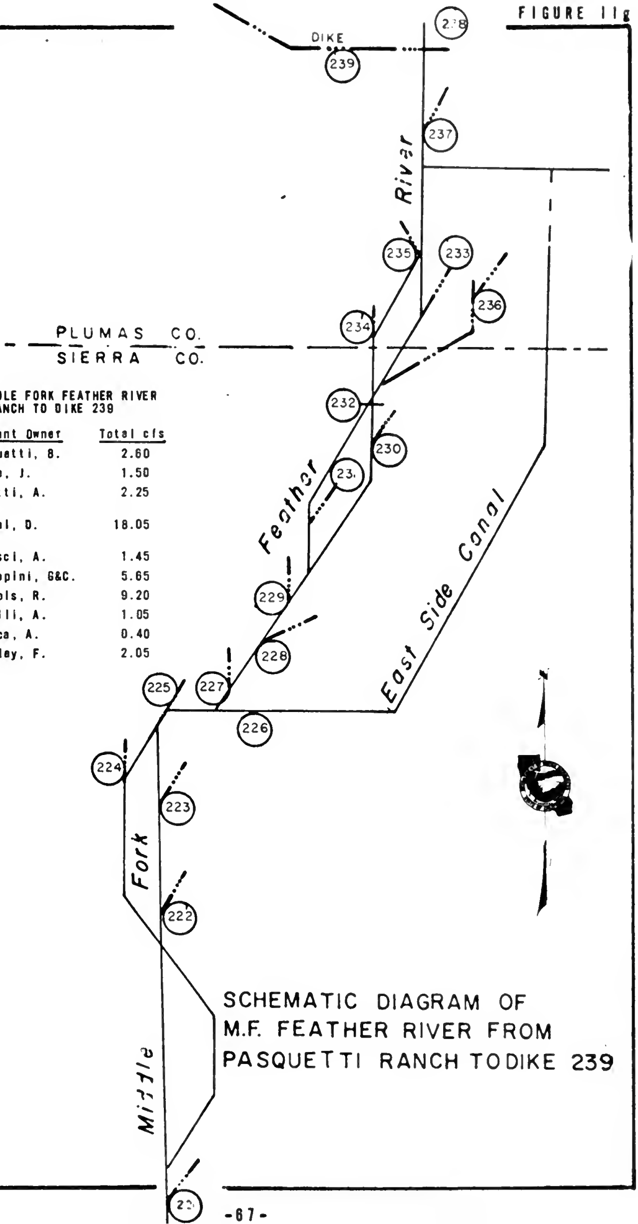


ALLOCATIONS FROM MIDDLE FORK FEATHER RIVER
BETWEEN SIERRAVILLE & PASQUETTI RANCH

Diversion No.	Present Owner	Total cfs
134	Hannon, P.	0.015
134	Snozzi, A.	0.02
135	Carmichael, F.	0.55
137,141,146*, 147*,149,152	Webber, G.	13.00
136,137,138, 139,147*	Bony, M.	6.65
146	Wilson Bros.	2.00
148,149,150, 151	Small, F.	4.90
140,256	Alpers, F.	3.20
142,143,255	Torri, K.	4.00
144,153,154	Mooney, J.	2.00

* See Fig. 11e

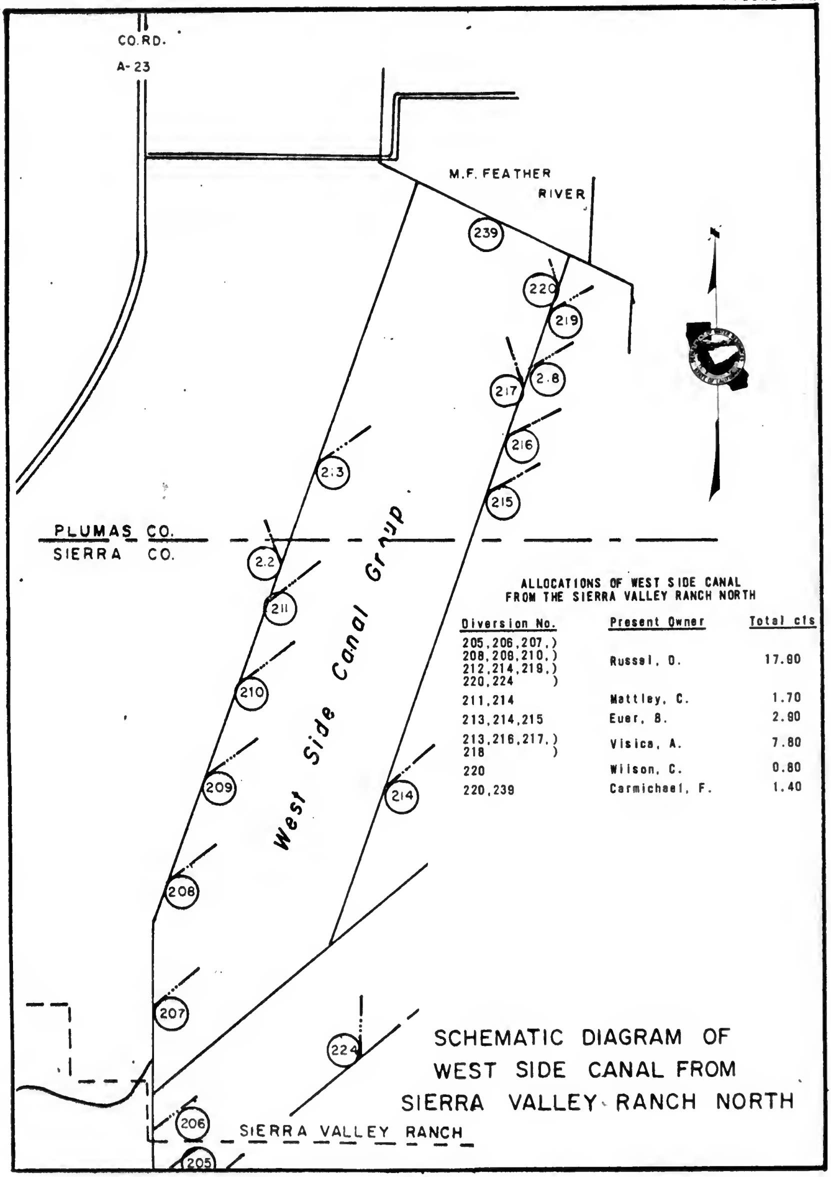
SCHEMATIC DIAGRAM OF M.F.
FEATHER RIVER BETWEEN
SIERRAVILLE & PASQUETTI RANCH



ALLOCATIONS FROM MIDDLE FORK FEATHER RIVER FROM PASQUETTI RANCH TO DIKE 239

Diversion No.	Present Owner	Total cfs
221	Pasquetti, B.	2.60
222	Mello, J.	1.50
222,223	Vanetti, A.	2.25
224,225,226,) 227,228,230,) 231,234)	Russel, D.	18.05
226,229	Genasci, A.	1.45
226,232,233	Filippini, G&C.	5.65
226,235,236	Nichols, R.	9.20
226	Ramelli, A.	1.05
234	Visica, A.	0.40
119,237,238	Bradley, F.	2.05

SCHEMATIC DIAGRAM OF M.F. FEATHER RIVER FROM PASQUETTI RANCH TO DIKE 239



ALLOCATIONS OF WEST SIDE CANAL
FROM THE SIERRA VALLEY RANCH NORTH

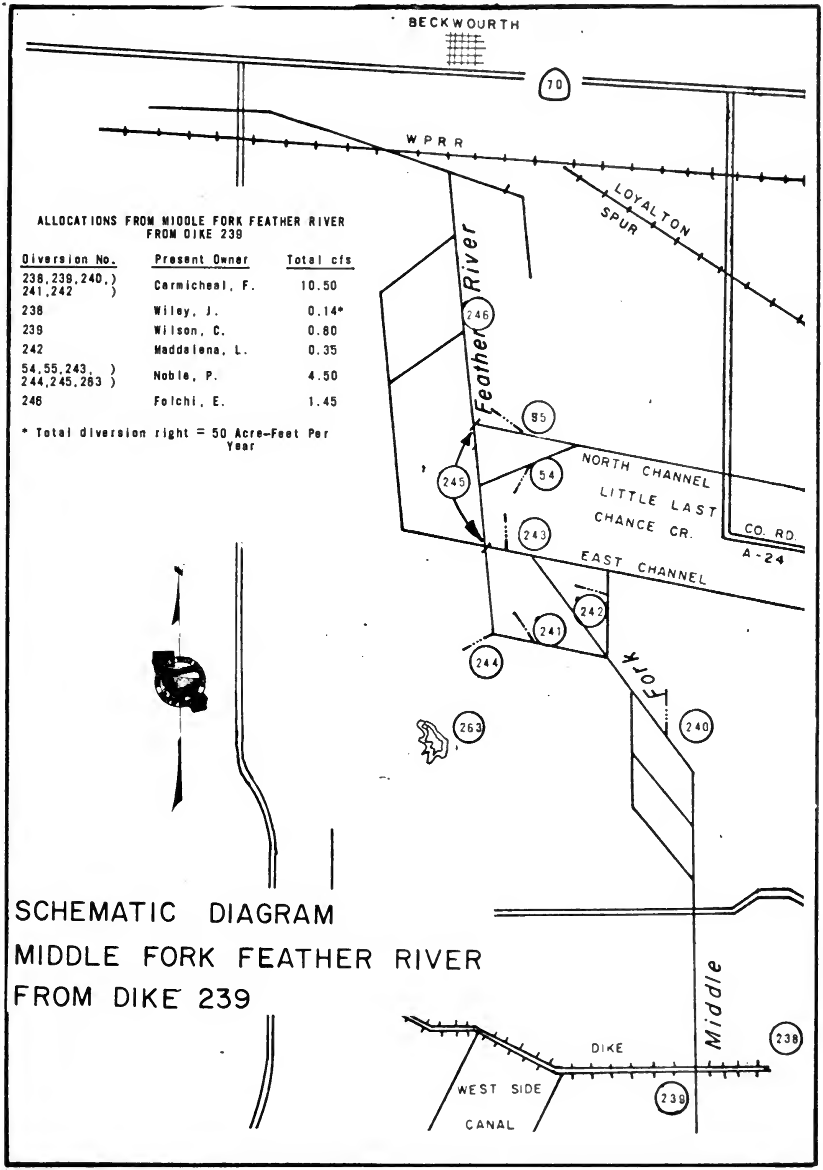
Diversion No.	Present Owner	Total cfs
205,206,207,) 208,208,210,) 212,214,219,) 220,224)	Russel, D.	17.90
211,214	Mattley, C.	1.70
213,214,215	Euer, B.	2.90
213,216,217,) 218)	Visica, A.	7.80
220	Wilson, C.	0.80
220,239	Carmichael, F.	1.40

SCHEMATIC DIAGRAM OF
WEST SIDE CANAL FROM
SIERRA VALLEY RANCH NORTH

ALLOCATIONS FROM MIDDLE FORK FEATHER RIVER
FROM DIKE 239

Diversion No.	Present Owner	Total cfs
238,239,240,) 241,242)	Carmicheal, F.	10.50
238	Wiley, J.	0.14*
239	Wilson, C.	0.80
242	Maddalena, L.	0.35
54,55,243,) 244,245,263)	Noble, P.	4.50
246	Folchi, E.	1.45

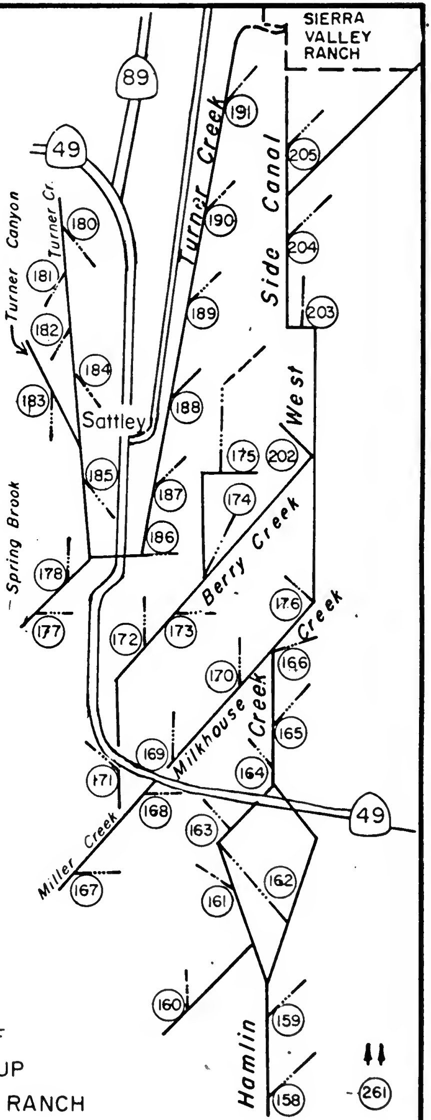
* Total diversion right = 50 Acre-Feet Per Year



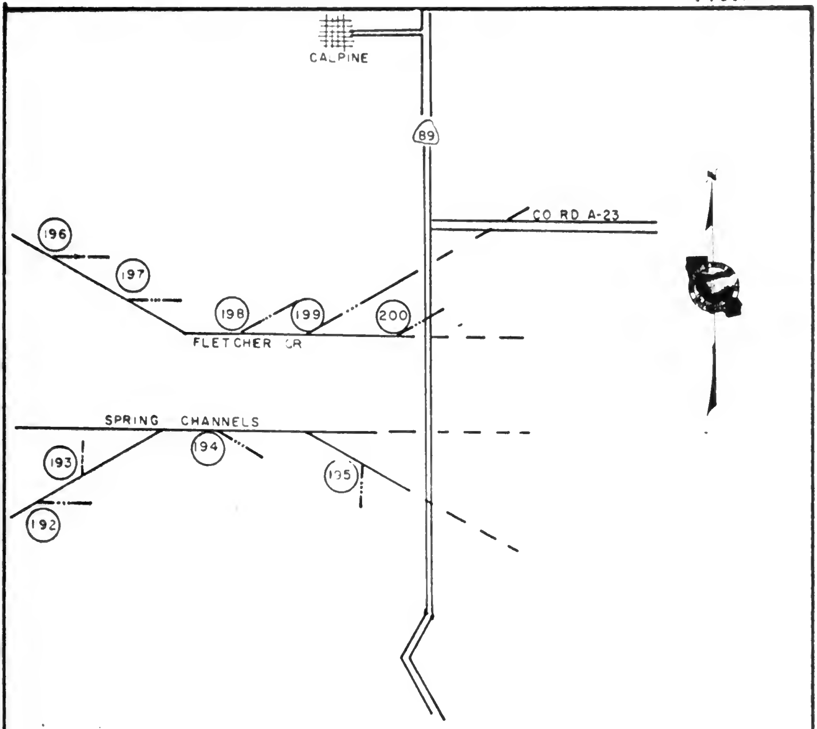
SCHEMATIC DIAGRAM
MIDDLE FORK FEATHER RIVER
FROM DIKE 239

ALLOCATIONS FROM WEST SIDE CANAL GROUP SOUTH OF SIERRA VALLEY RANCH

Diversion No.	Present Owner	Total cfs
158,159,161,) 162,261)	Maddalena, L.	6.13
167	Strang, A&E.	0.01
160,161,163,) 164,167)	Strang, Estate of	8.54
165,167,168,) 169,170,171,) 173,174,177)	Martinetti, E.	6.33
165,166	Webber, G.	2.60
172,177,178,) 184,185)	Cavitt, J.	4.25
174,202	Openshaw, G.	2.10
175,184,186,) 187)	Church, G.	5.60
180	Turner, J.	0.02
175,181,182,) 183,184,185,) 187,189,190,) 202)	Turner, F.	10.25
176	Wilson Bros.	1.50
180,188	Dargie, T.	2.90
189	Berutti, J.	2.50
189,191,202,) 204,205	Van Vleck, G.	6.05
176,203	Mooney, J.	1.50
176	Pasguetti, B.	2.40



SCHEMATIC DIAGRAM OF
WEST SIDE CANAL GROUP
SOUTH OF SIERRA VALLEY RANCH



ALLOCATIONS FROM FLETCHER CREEK
AND SPRING CHANNELS

Diversion No.	Present Owner	Total cfs
196	Sierra Co. Water District	0.52
198	Blanchard, O.	0.04
177,178,192,) 193,194)	Borelli, A.	1.744
192	Scott, F.	0.05
192,193,194	Jinnette, F&W.	0.046
195,199,200	Paulson & Cadenhead	1.428
199	Lukens & Coppla	0.302
199,200	All Pro Guest Ranch	0.864
199,200	Berutti, J.	0.456

SCHEMATIC DIAGRAM
OF FLETCHER CR. AND
SPRING CHANNEL

North Fork Cottonwood Creek Service Area

The North Fork Cottonwood Creek service area is located in the southwestern part of Shasta County near the towns of Ono and Gas Point. There are 13 water right owners in the area with total allotments of 30.30 cubic feet per second.

North Fork Cottonwood Creek and its tributaries, Moon Creek and Jerusalem Creek, are the major sources of water supply in the area. These creeks rise on the east slopes of the foothills of the Coast Range Mountains. North Fork Cottonwood Creek flows in a southeasterly direction to its confluence with Cottonwood Creek near Gas Point. The area is characterized by high summer temperatures and moderate rainfall. The irrigable land consists of sparsely scattered parcels separated by steep, brushy hills. These lands are at about the 1,000-foot elevation.

A schematic drawing of the North Fork Cottonwood Creek stream system is presented as Figure 12, page 75.

Water Supply

Snowmelt contributes to the flow in North Fork Cottonwood Creek during the early weeks of the irrigation season. However, perennial springs provide the major source of supply during the summer and fall months. The flow is normally sufficient to supply all demands. In dry years, however, the available supply may be as low as 30 to 40 percent of the decreed allotments.

A record of the daily mean discharge of North Fork Cottonwood Creek near Igo is presented in Table 19. This stream gaging station is located downstream from most points of diversion on the creek, but gives a general indication of the water supply.

Method of Distribution

The general practice throughout the area is to irrigate by wild flooding. One water user, however, pumps directly from the creek using a sprinkler system to irrigate his crops. Pumping was necessary at this diversion point because the irrigated land was higher in elevation than the creek channel.

The North Fork Cottonwood Creek decree (see Table 1) provides for distribution of water on an equal and correlative basis for all users (one priority).

1971 Distribution

Watermaster service began in the North Fork Cottonwood Creek service area on July 1 and continued until September 30. Ross P. Rogers, Water Resources Engineering Associate, was watermaster during this period.

The available water supply in North Fork Cottonwood Creek was extremely good. High flows occurred during the spring months. Although the streamflow decreased significantly during late July, August, and September, all demands were met, due to limited or non-use of the allotments of a few water right owners.

Special Occurrences

Rainbow Lake remained far below its storage capacity due to the unsafe condition of Misselbeck Dam. Curtailment of storage will continue until extensive repairs are made.

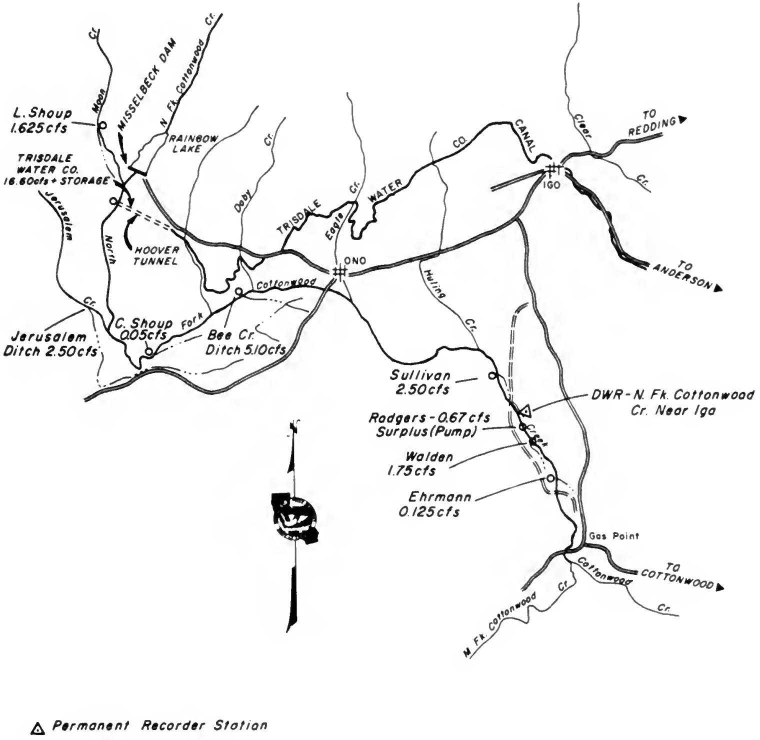
NORTH FORK COTTONWOOD CREEK WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 19

NORTH FORK COTTONWOOD CREEK NEAR IGO

Day	March	April	May	June	July	August	September	Day
1	122	359	137	81	19	8.0	7.3	1
2	105	369	137	73	18	7.9	8.2	2
3	105	359	148	67	17	7.9	10	3
4	101	349	142	67	16	7.3	9.7	4
5	97	350	141	64	15	7.8	10	5
6	92	350	131	62	14	8.0	10	6
7	92	340	118	62	14	8.0	11	7
8	88	322	126	59	14	7.8	14	8
9	88	350	113	59	14	7.4	14	9
10	92	371	105	56	14	7.5	13	10
11	118	314	101	54	13	6.8	13	11
12	636	299	101	52	12	6.1	13	12
13	330	281	97	45	12	7.2	12	13
14	350	241	92	43	16	8.9	13	14
15	297	234	88	36	14	6.4	12	15
16	281	228	86	35	13	6.0	13	16
17	256	221	81	33	13	5.8	12	17
18	221	218	78	30	18	5.4	12	18
19	200	214	78	29	18	4.9	12	19
20	187	214	76	26	17	4.9	12	20
21	180	200	73	25	15	5.3	6.8	21
22	180	194	70	23	15	5.6	5.9	22
23	187	187	70	22	13	5.4	5.4	23
24	234	180	67	21	12	5.2	4.1	24
25	1370	175	67	20	12	5.3	4.1	25
26	1630	164	73	33	11	5.2	4.6	26
27	773	153	78	29	10	5.2	4.2	27
28	630	148	109	24	9.0	5.1	4.3	28
29	557	139	88	22	8.9	5.2	6.9	29
30	455	137	81	20	8.5	5.6	12	30
31	384		76		8.1	7.7		31
Mean	336	255	97.7	42.4	13.6	6.4	9.7	Mean
Runoff In Acre-Feet	20703	15193	6006	2523	836	394	574	Runoff In Acre-Feet



SCHEMATIC DIAGRAM
OF N. FK. COTTONWOOD CR.
WATERMASTER SERVICE AREA

North Fork Pit River Watermaster Service Area

The North Fork Pit River service area lies along the west slopes of the Warner Mountains in northeastern Modoc County and extends from the Oregon border about 45 miles southward to a point just south of Alturas. There are 91 water right owners in the area with total allotments of 214.655 cubic feet per second.

A number of small independent stream systems, rising on the west slope of the Warner Mountains and generally following a westerly direction, comprise the major source of water supply. Three of these streams, New Pine Creek, Cottonwood Creek, and Davis Creek, are tributary to Goose Lake. All other streams in the service area are tributary to the North Fork Pit River. They are: Linville Creek, Franklin Creek, Joseph Creek, Thoms Creek, and Parker Creek. The North Fork Pit River flows in a southerly direction from the south rim of Goose Lake to its confluence with the South Fork Pit River immediately below Alturas. Streams tributary to Goose Lake do not contribute directly to the flow of the North Fork Pit River, since the lake has not spilled into the river for nearly 100 years.

The place of use in the northern half of the area lies in a relatively long, narrow, sloping strip extending between the eastern shore of Goose Lake and the foothills of the Warner Mountains. The places of use in the southern half of the area, which are supplied from the North Fork Pit River and its tributaries, are primarily in the narrow valleys bordering the streams.

A schematic drawing of each major stream system within the North Fork Pit River service area is presented as Figures 13 through 13k, pages 86 through 97.

Water Supply

The streams which serve the area are fed by snowmelt runoff and springs in the Warner Mountains. A large portion of the runoff occurs early in the spring, decreasing rapidly in May and June. The watershed of New Pine Creek, however, is at a higher elevation and maintains a good supply well into the summer. After the snowpack is depleted, perennial springs at the headwaters of the tributaries are the main sources of water supply. Linville Creek, with its small drainage basin, depends almost entirely on springs at its head. Gleason Creek, Thoms Creek, and Cottonwood Creek are usually dry in August, except during years of above-average water supply.

Some supplemental water is stored in small reservoirs throughout the area, none of which are operated by the watermaster. However, the inflows to some of these reservoirs are under the watermaster's jurisdiction.

Records of daily mean discharge at several stream gaging stations in the North Fork Pit River service area are presented in Tables 20 through 30, pages 80 through 85.

Method of Distribution

Irrigation is accomplished primarily by wild flooding from field ditches located along high spots in the meadows. Various types of diversion structures are used to divert the natural streamflow into small earth ditches which convey it to the meadows. At present there is a limited amount of sprinkler irrigation, some by naturally developed pressure and some by direct pumping from small sumps in the ditches. Subirrigation by the use of large flashboard dams to raise the water level in the stream channel is being practiced on the North

Fork Pit River between Parker Creek and Alturas. The several decrees (see Table 1) which apply to the North Fork Pit River service area establish the following number of priority classes for the various stream systems: New Pine Creek - four; Cottonwood Creek - six; Davis Creek - four; Linville Creek - two; Franklin Creek - four; Joseph Creek - four; Thoms Creek - three; Parker Creek - four; Shields Creek - four; Gleason Creek - five; and North Fork Pit River - five.

1971 Distribution

Charles H. Holmes, Assistant Engineer, Water Resources, was watermaster in the North Fork Pit River service area during the 1971 season, beginning on April 20 and continuing through September 30.

The available water supply during the spring months was excellent throughout the service area. A large storm on May 29-30 did considerable damage to water stage recorders on several streams. Streamflows during the latter part of the season were at or above average conditions.

New Pine Creek. Surplus water was available to New Pine Creek water right owners throughout the period that the proration or correlative system of distribution was in effect (until June 30). Commencing July 1, in accordance with provisions of the decree, distribution was based on the priority system (four priorities). Fourth priority allotments received some water until August 1. Thereafter, the flow gradually decreased until approximately 50 percent of third priority allotments were being met at the end of the season.

Cottonwood Creek. A sufficient water supply existed in Cottonwood Creek to satisfy all allotments (six priorities) until late spring. The fourth priority allotments were served until late June. Thereafter, the flow decreased gradually, reaching first priority on August 25. By the end of the season the flow had decreased until only about 22 percent of first priority allotments were served.

Davis Creek. The water stage recorder and data were washed away by high water on May 30.

Linville Creek. The available water supply in Linville Creek decreased steadily from the time watermaster service began until the end of the irrigation season. A small percentage of second priority allotments (two priorities) was supplied from June 3 to June 10. The available supply for first priority allotments ranged from 100 percent on May 18 to 46 percent at the end of the season.

Franklin Creek. The available water supply in Franklin Creek was sufficient to satisfy all allotments from April 29 to July 2. One hundred percent of third priorities were served until July 2. The flow then gradually decreased until mid-September when 34 percent of third priority allotments were being served. On September 15 the winter schedule of priorities became effective. Under this schedule, only 29 percent of third priority allotments were met.

Joseph Creek. A surplus water supply existed in Joseph Creek until July 28. The flow then receded until on September 7 only first priority allotments (four priorities) were served. Thereafter, the flow gradually decreased to 85 percent of first priority allotments at the end of the season.

Thoms Creek. A sufficient water supply existed in Thoms Creek to meet all allotments (three priorities) until August 7. The flow then gradually decreased to 46 percent of third priority allotments at the end of the season.

Gleason Creek. The recorder station was destroyed by high water on May 30. Data up to that time was salvaged.

Shields Creek. A surplus water supply existed in Shields Creek until July 1.

The flow decreased rapidly until approximately 75 percent of first priority allotments (four priorities) were served on September 1. The supply then gradually increased until the end of September when 60 percent of second priority allotments were being supplied.

Parker Creek. The flow in Parker Creek peaked in mid-May. It then decreased steadily until July 14, when 100 percent of all allotments (four priorities) were still served. From then until the end of July the flow continued to decrease gradually. Throughout the remainder of the season the flow remained constant at 15 percent of third priority allotments.

North Fork Pit River. A surplus water supply existed in the North Fork Pit River until June 10. On that date the Dorris Reservoir allotment was reduced. The flow then decreased rapidly until June 19 when second priority allotments (five priorities) were being served. The decrease continued until July 26 when only first priority was available. This condition continued throughout the remainder of the season.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 20

NEW PINE CREEK BELOW SCHROEDER'S

Day	March	April	May	June	July	August	September	Day
1			13	31	25	12	10	1
2			16	28	24	11	10	2
3			21	28	23	11	10	3
4			28	32	21	11	10	4
5			23	34	21	11	10	5
6			19	32	20	11	10	6
7			20	31	20	11	10	7
8			23	38	19	11	10	8
9			30	43	19	11	10	9
10			31	54	18	10	10	10
11			38	43	18	10	10	11
12			43	54	17	10	10	12
13			57	46	16	10	10	13
14			41	54	16	10	10	14
15			38	47	16	10	9.3	15
16			28	50	16	10	9.1	16
17			23	53	15	10	9.0	17
18			23	53	15	10	8.9	18
19			23	47	15	10	8.9	19
20			23	48	14	10	8.9	20
21			22	53	14	10	8.9	21
22			22	46	14	10	8.9	22
23			23	46	14	10	8.9	23
24			25	43	13	10	9.0	24
25			27	46	13	10	8.9	25
26		11*	28	46	13	10	8.9	26
27		11	28	46	13	10	9.0	27
28		11	31	40	13	10	9.0	28
29		13	35	35	12	10	9.0	29
30		11	46	28	12	10	9.0	30
31			40		12	10		31
Mean		11.4	28.6	42.4	16.5	10.3	9.5	Mean
Runoff In Acre-Feet		113	1760	2520	1010	635	562	Runoff In Acre-Feet

* Beginning of Record

TABLE 21

COTTONWOOD CREEK BELOW LARKIN GARDEN DITCH

Day	March	April	May	June	July	August	September	Day
1					12	6.5	1.5	1
2					12	6.4	0.9	2
3					12	6.3	0.9	3
4					11	6.3	0.9	4
5					11	6.2	0.9	5
6					11	6.2	0.9	6
7					11	6.0	0.9	7
8					10	6.0	0.8	8
9					10	6.0	0.8	9
10				22*	9.7	5.8	0.8	10
11				22	9.4	5.8	0.8	11
12				21	9.0	5.8	0.8	12
13				20	8.7	5.7	0.8	13
14				19	8.2	5.7	0.8	14
15				17	8.0	5.6	0.8	15
16				16	8.0	5.6	0.8	16
17				15	8.0	5.6	0.9	17
18				15	8.0	5.6	0.9	18
19				15	8.0	5.5	0.9	19
20				15	7.8	5.2	0.8	20
21				14	7.8	5.0	0.8	21
22				14	7.4	4.8	0.8	22
23				14	7.1	4.6	0.8	23
24				13	7.1	4.1	0.8	24
25				14	7.0	3.8	0.9	25
26				14	7.1	3.1	0.9	26
27				14	7.0	2.8	0.9	27
28				14	6.9	2.5	1.0	28
29				13	6.8	2.4	1.0	29
30				13	6.7	2.0	1.0	30
31					6.6	1.8		31
Mean				15.9	8.8	5.0	1.5	Mean
Runoff In Acre-Feet				862	536	307	53	Runoff In Acre-Feet

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 22

DAVIS CREEK AT OLD FISH WHEEL

Day	March	April	May	June	July	August	September	Day
1								1
2								2
3								3
4								4
5								5
6								6
7								7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15								15
16								16
17								17
18								18
19								19
20								20
21								21
22								22
23								23
24								24
25								25
26								26
27								27
28								28
29								29
30								30
31								31
Mean								Mean
Runoff In Acre-Feet								Runoff In Acre-Feet

NO RECORD AVAILABLE FOR 1971 SEASON

TABLE 23

LINVILLE CREEK AT OLD POWER HOUSE

Day	March	April	May	June	July	August	September	Day
1				3.7	2.5	2.0	2.0	1
2				3.8	2.4	2.0	2.0	2
3				4.3	2.4	2.0	2.0	3
4				4.7	2.4	2.0	2.0	4
5				4.7	2.4	2.0	2.0	5
6				4.5	2.3	2.0	2.0	6
7				4.3	2.3	2.0	1.9	7
8				4.1	2.2	2.0	1.9	8
9				4.0	2.2	2.0	1.9	9
10				3.9	2.2	2.0	1.9	10
11				3.7	2.2	2.0	1.9	11
12				3.6	2.2	2.0	1.9	12
13				3.3	2.2	2.0	1.9	13
14				3.2	2.2	2.0	1.9	14
15				3.1	2.2	2.0	1.9	15
16				3.1	2.2	2.0	1.9	16
17				3.1	2.2	2.0	1.9	17
18			3.3*	3.0	2.2	2.0	1.9	18
19			3.2	3.0	2.2	2.0	1.9	19
20			3.1	2.9	2.2	2.0	1.9	20
21			3.0	2.8	2.2	2.0	1.8	21
22			2.9	2.8	2.2	2.0	1.8	22
23			3.0	2.8	2.2	2.0	1.8	23
24			3.2	2.7	2.1	2.0	1.8	24
25			3.3	2.7	2.1	2.0	1.8	25
26			3.4	2.7	2.0	2.0	1.8	26
27			3.3	2.6	1.9	2.0	1.8	27
28			3.4	2.6	1.9	2.0	1.8	28
29			3.4	2.6	2.0	2.0	1.8	29
30			3.7	2.5	2.0	2.0	1.8	30
31			3.7		2.0	2.0		31
Mean			3.3	3.4	2.2	2.0	1.9	Mean
Runoff In Acre-Feet			91	200	135	123	112	Runoff In Acre-Feet

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 24

FRANKLIN CREEK ABOVE DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1			13	17	11	4.5	3.9	1
2			14	17	10	4.3	3.9	2
3			16	22	9.5	4.2	3.8	3
4			20	28	8.8	4.2	3.8	4
5			19	29	8.3	4.1	3.9	5
6			18	28	7.7	4.1	3.9	6
7			18	28	6.3	4.1	3.8	7
8			23	24	5.1	3.9	3.7	8
9			25	22	4.6	3.9	3.7	9
10			25	21	4.9	3.8	3.7	10
11			28	18	4.7	3.8	3.7	11
12			28	18	4.9	3.8	3.7	12
13			25	17	5.3	3.8	3.7	13
14			13	18	5.4	3.8	3.7	14
15			13	15	5.4	3.8	3.6	15
16			14	15	5.3	3.8	3.6	16
17			14	14	5.1	3.8	3.6	17
18			14	14	5.1	3.9	3.6	18
19			15	14	5.1	3.9	3.6	19
20			15	14	5.1	3.9	3.6	20
21			14	13	5.1	3.8	3.6	21
22		7.4*	13	13	5.1	3.8	3.4	22
23		7.4	13	13	5.0	3.8	3.4	23
24		6.8	13	13	4.7	3.8	3.7	24
25		6.8	14	13	4.6	3.8	3.9	25
26		7.5	16	14	4.6	3.8	4.1	26
27		8.0	17	13	4.5	3.8	4.1	27
28		9.8	17	13	4.6	3.8	4.1	28
29		12	18	12	4.6	3.9	4.1	29
30		12	18	12	4.5	3.9	4.1	30
31			18		4.5	4.1		31
Mean		8.6	17.4	17.3	5.8	3.9	3.8	Mean
Runoff In Acre-Feet		154	1070	1030	356	241	224	Runoff In Acre-Feet

* Beginning of Record

TABLE 25

JOSEPH CREEK BELOW COUCH CREEK

Day	March	April	May	June	July	August	Septambar	Day
1			41	50	22	6.8	2.2	1
2			39	58	21	5.9	2.3	2
3			51	68	19	5.7	2.3	3
4			52	71	17	5.7	2.2	4
5			51	68	17	5.0	2.2	5
6			45	65	16	4.8	2.3	6
7			42	64	16	4.7	2.5	7
8			65	63	16	4.7	2.2	8
9			72	62	14	4.6	2.1	9
10			65	59	15	4.4	2.0	10
11			64	54	13	4.2	2.0	11
12			63	51	13	4.1	2.0	12
13			63	48	12	4.0	2.0	13
14			54	45	12	4.0	2.0	14
15			51	42	11	3.8	2.0	15
16			48	42	11	3.7	2.0	16
17			42	38	11	3.7	2.0	17
18			36	36	11	4.0	2.0	18
19			32	32	11	4.0	2.1	19
20			31	30	10	3.7	2.1	20
21			30	29	10	3.4	2.1	21
22			27	28	9.3	2.9	2.1	22
23		34*	26	28	9.0	2.9	2.1	23
24		30	27	26	8.5	2.9	2.1	24
25		29	29	32	8.2	2.2	2.2	25
26		32	36	44	7.8	2.2	3.2	26
27		32	36	36	7.3	2.1	3.7	27
28		33	37	31	7.1	2.1	3.1	28
29		37	45	26	8.8	2.1	3.1	29
30		41	47	24	6.6	2.1	3.1	30
31			45		6.8	2.2		31
Mean		33.4	44.9	45.0	12.2	3.9	2.3	Mean
Runoff In Acre-Feet		532	2780	2680	748	235	137	Runoff In Acre-Feet

* Beginning of Record

TABLE 26

NORTH FORK PIT RIVER BELOW THOMS CREEK

Day	March	April	May	June	July	August	September	Day
1			135	345	19	8.2	17	1
2			134	345	18	5.0	18	2
3			137	213	16	3.3	18	3
4			213	147	14	3.1	18	4
5			178	109	15	2.8	17	5
6			173	85	16	2.6	16	6
7			169	69	14	1.8	17	7
8			233	53	16	1.8	15	8
9			242	43	18	3.1	10	9
10			203	43	15	3.2	8.8	10
11			181	28	16	3.3	8.0	11
12			191	21	16	3.6	8.0	12
13			194	19	16	3.6	8.0	13
14			177	19	17	3.6	6.8	14
15			168	19	17	3.6	5.0	15
16			151	18	17	3.4	5.0	16
17			143	18	16	3.3	4.5	17
18			205	18	16	3.2	4.3	18
19			188	18	17	3.1	4.3	19
20			183	18	15	3.1	4.2	20
21			180	18	16	3.1	4.2	21
22			172	18	18	3.1	4.0	22
23			170	17	14	3.1	3.6	23
24			169	15	14	2.9	3.4	24
25			167	18	11	2.9	3.1	25
26		122*	102	50	8.8	2.8	3.8	26
27		122	118	47	7.4	2.8	6.8	27
28		124	122	40	5.0	3.8	6.8	28
29		129	213	30	4.2	8.8	4.6	29
30		134	285	23	4.0	15	5.0	30
31			295		4.0	16		31
Mean		126	180	64.1	13.8	4.2	8.6	Mean
Runoff In Acre-Feet		1250	11070	3810	846	260	512	Runoff In Acre-Feet

* Beginning of Record

TABLE 27

THOMS CREEK AT CEDARVILLE-ALTURAS HIGHWAY

Day	March	April	May	June	July	August	September	Day
1			74	86	14	4.4	1.4	1
2			73	41	14	3.3	1.4	2
3			82	97	13	3.2	1.4	3
4			85	125	12	2.8	1.3	4
5			77	95	11	2.2	1.2	5
6			63	85	11	2.2	1.3	6
7			81	82	12	2.2	1.5	7
8			66	89	9.4	1.9	1.3	8
9			63	61	8.7	1.9	1.2	9
10			63	59	8.5	1.8	1.2	10
11			61	51	7.8	1.7	1.2	11
12			66	47	7.1	1.7	1.2	12
13			80	42	6.5	1.8	1.2	13
14			68	38	6.1	1.8	1.2	14
15			62	34	5.7	1.7	1.0	15
16			53	29	5.7	1.5	1.0	16
17			46	25	5.5	1.5	1.0	17
18			40	23	5.5	1.5	1.0	18
19			36	22	5.5	1.5	1.0	19
20			33	20	5.3	1.4	1.2	20
21		82*	29	21	5.3	1.4	1.2	21
22		81	27	17	4.9	1.4	1.2	22
23		80	25	16	4.7	1.3	1.2	23
24		78	25	14	4.7	1.2	1.2	24
25		81	27	16	4.6	1.2	1.3	25
26		90	32	27	4.0	1.3	1.7	26
27		97	31	21	3.8	1.3	2.1	27
28		75	35	20	3.5	1.4	2.2	28
29		71	45	17	3.2	1.4	2.7	29
30		75	45	16	3.0	1.4	2.8	30
31			63		4.6	1.4		31
Mean		81.0	52.2	43.6	7.1	1.8	1.4	Mean
Runoff In Acre-Feet		1610	3240	2570	438	112	83	Runoff In Acre-Feet

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 28

PARKER CREEK AT FOGARTY RANCH

Day	March	April	May	June	July	August	September	Day
1						18	4.7	1
2						8.0	4.7	2
3						7.8	5.4	3
4						7.4	5.0	4
5						8.7	4.0	5
6						6.0	5.7	6
7						5.4	9.0	7
8						4.7	5.7	8
9						4.4	4.0	9
10						3.7	3.7	10
11						4.0	3.5	11
12						4.0	3.7	12
13						4.0	3.7	13
14						4.0	3.5	14
15						4.0	3.5	15
16						4.0	3.5	16
17						4.0	3.7	17
18						4.0	4.0	18
19						4.0	4.0	19
20						4.0	4.4	20
21						4.0	5.0	21
22						4.0	5.0	22
23						3.5	5.4	23
24						4.0	8.0	24
25						4.0	6.7	25
26					12*	4.7	12	26
27					11	5.7	12**	27
28					9.4	5.7		28
29					6.7	5.7		29
30					6.7	4.0		30
31					9.4	4.4		31
Mean					9.2	5.3	5.2	Mean
Runoff In Acre-Feet					109	323	281	Runoff In Acre-Feet

* Beginning of Record
** End of Record

TABLE 29

SHIELDS CREEK BELOW PEPPERDINE RANCH

Day	March	April	May	June	July	August	September	Day
1				110	10	5.1	3.8	1
2				115	10	5.1	3.8	2
3				110	9.3	5.1	3.8	3
4				90	8.8	4.8	3.8	4
5				70	8.4	4.2	3.8	5
6				57	8.2	3.7	5.3	6
7			40*	44	8.2	3.2	8.0	7
8			80	37	7.8	2.8	2.7	8
9			70	34	7.7	2.5	2.6	9
10			52	39	7.5	2.4	2.8	10
11			46	29	7.5	2.3	2.6	11
12			45	26	7.3	2.2	2.6	12
13			45	23	7.1	2.1	2.8	13
14			37	20	6.8	2.9	2.5	14
15			32	18	6.4	3.7	2.5	15
16			30	15	6.4	3.7	2.5	16
17			26	16	6.2	3.7	2.6	17
18			23	18	9.7	3.7	2.7	18
19			20	15	8.0	3.8	2.8	19
20			18	14	7.1	3.9	2.9	20
21			17	13	6.6	4.0	2.9	21
22			14	12	6.1	4.0	2.9	22
23			13	11	5.7	4.1	2.9	23
24			13	10	5.3	4.1	2.9	24
25			11	13	5.1	4.1	2.8	25
26			10	85	5.1	4.1	2.9	26
27			18	24	5.1	4.1	3.7**	27
28			31	16	5.2	4.0		28
29			80	13	5.2	4.0		29
30			90	11	5.1	3.8		30
31			95		5.1			31
Mean			38.2	37.2	7.0	3.7	3.2	Mean
Runoff In Acre-Feet			1898	2214	432	221	174	Runoff In Acre-Feet

* Beginning of Record
** End of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

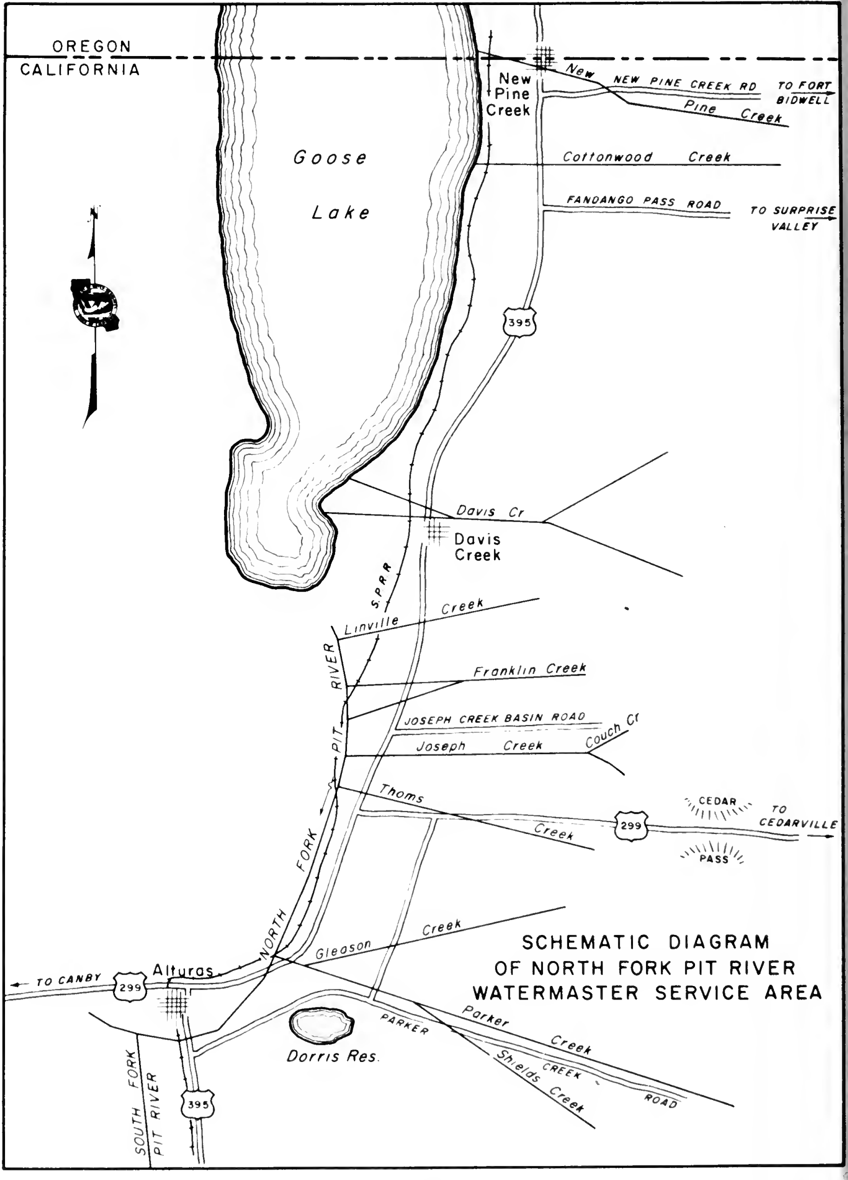
1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 30

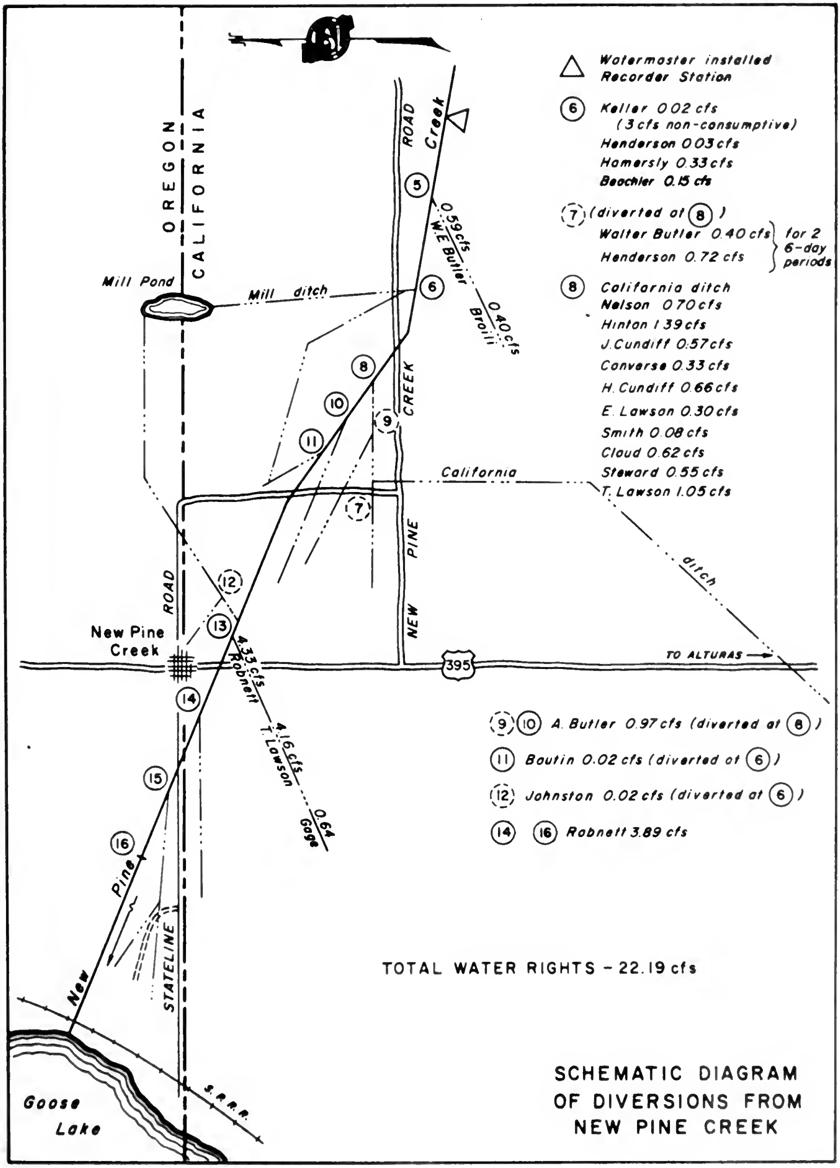
PARKER CREEK ABOVE HIGHWAY 395 NEAR ALTURAS

Day	March	April	May	June	July	August	September	Day
1			47	92	11	9.0	1.3	1
2			45	85	11	4.9	1.4	2
3			59	77	10	4.1	1.3	3
4			101	63	10	3.8	1.6	4
5			64	52	10	3.0	1.6	5
6			71	42	10	2.9	1.3	6
7			66	30	10	2.1	2.0	7
8			78	25	10	2.0	2.0	8
9			85	24	9.6	2.0	1.7	9
10			68	22	9.5	2.0	1.5	10
11			62	21	9.0	2.0	1.5	11
12			80	20	9.0	2.0	1.5	12
13			60	19	8.7	2.1	1.6	13
14			51	18	8.5	2.0	1.8	14
15			45	17	9.0	1.7	1.4	15
16			40	16	8.7	1.5	1.3	16
17			34	16	7.5	1.4	1.3	17
18			31	15	8.7	1.4	1.3	18
19			28	14	14	1.4	1.3	19
20			26	14	11	1.2	1.3	20
21			24	13	9.8	1.1	1.4	21
22			22	13	9.0	1.1	1.6	22
23			20	12	7.1	1.2	1.5	23
24			15	12	6.5	1.3	1.3	24
25			12	12	5.0	1.1	1.3	25
26			9.2	11	4.8	1.3	2.8	26
27		46*	13	11	4.3	1.1	4.3	27
28		48	30	11	3.9	1.0	3.2	28
29		50	66	11	3.2	1.1	3.4	29
30		49	78	11	3.3	1.2	5.6	30
31			92		3.3	1.2		31
Mean		47.8	49.0	26.6	8.2	2.1	1.9	Mean
Runoff In Acre-Feet		379	3010	1580	506	129	111	Runoff In Acre-Feet

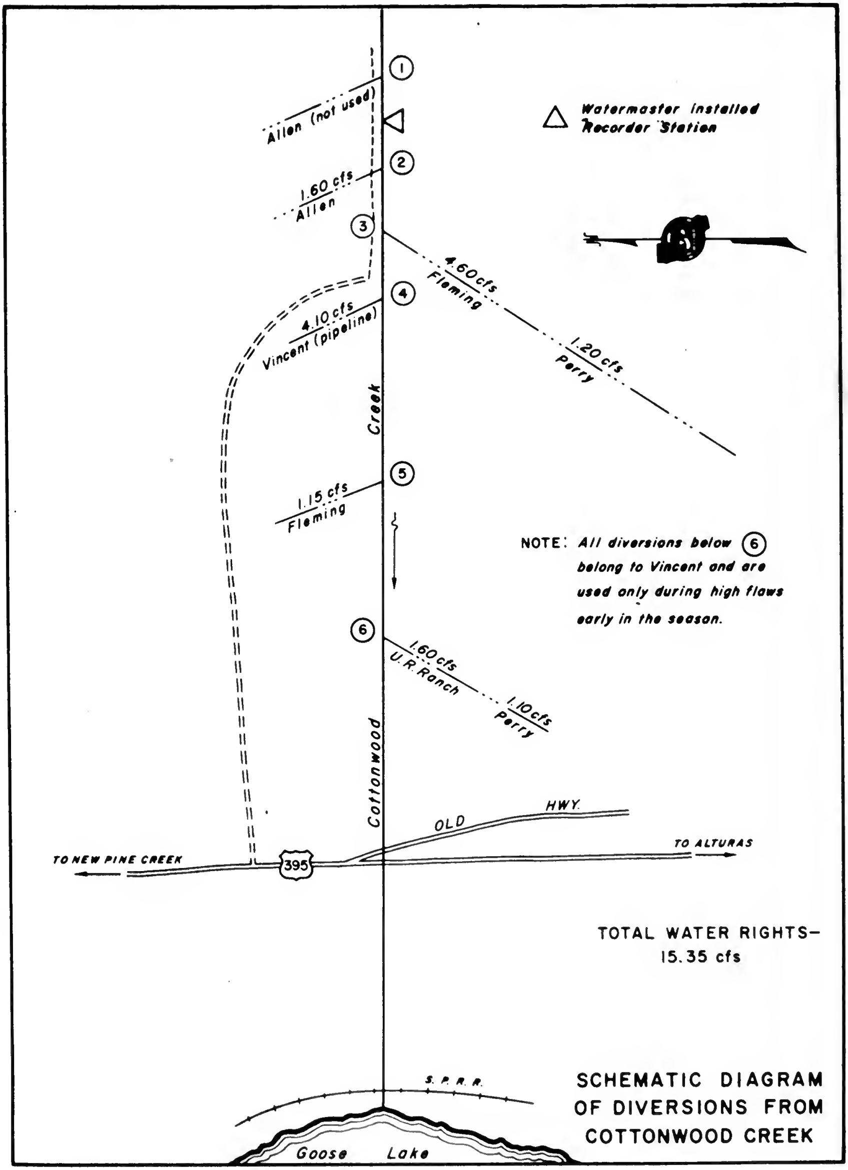
* Beginning of Record



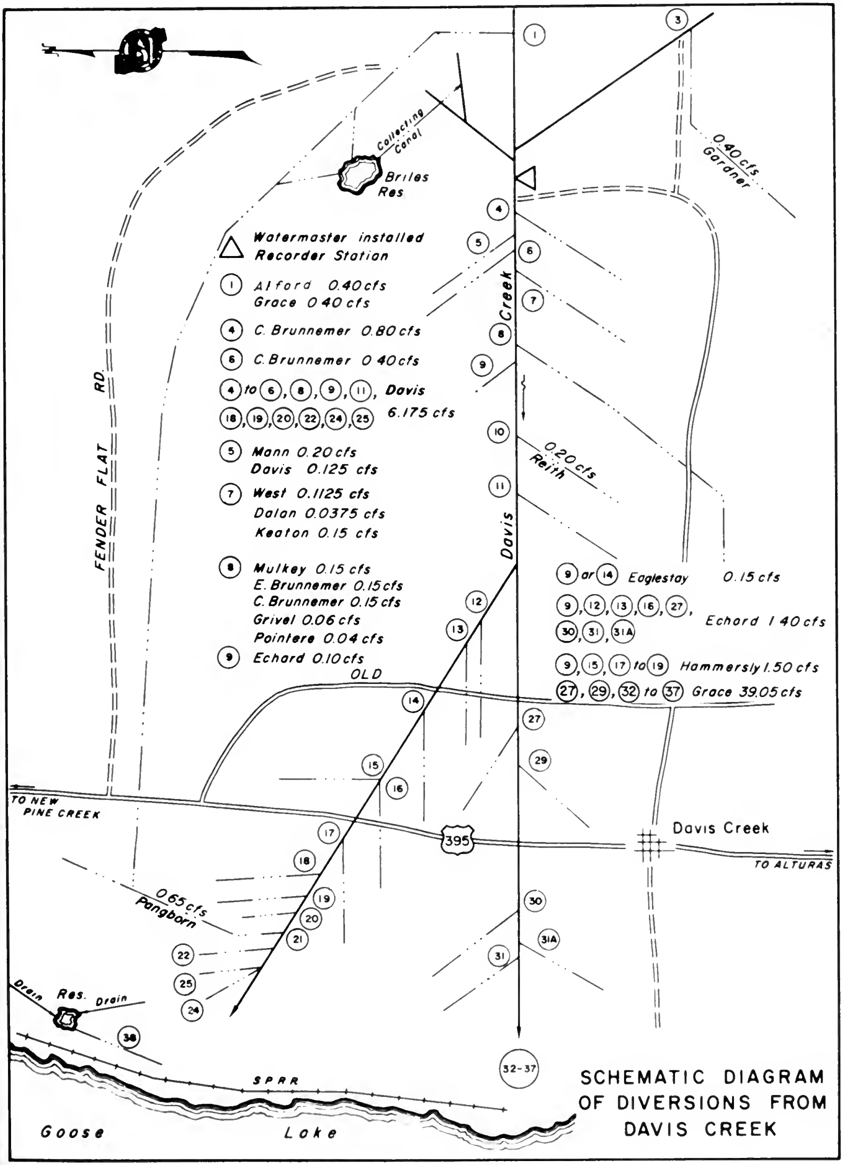
SCHEMATIC DIAGRAM
OF NORTH FORK PIT RIVER
WATERMASTER SERVICE AREA



SCHEMATIC DIAGRAM OF DIVERSIONS FROM NEW PINE CREEK

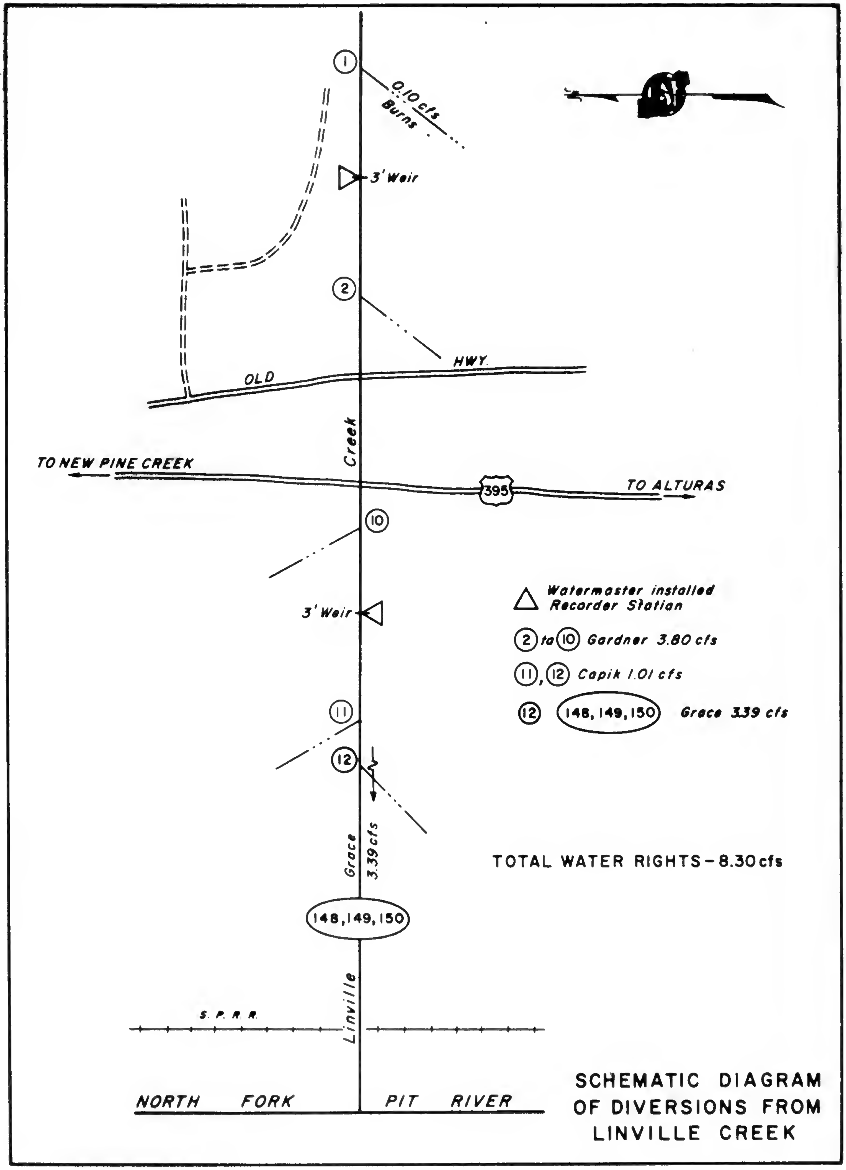


SCHEMATIC DIAGRAM OF DIVERSIONS FROM COTTONWOOD CREEK

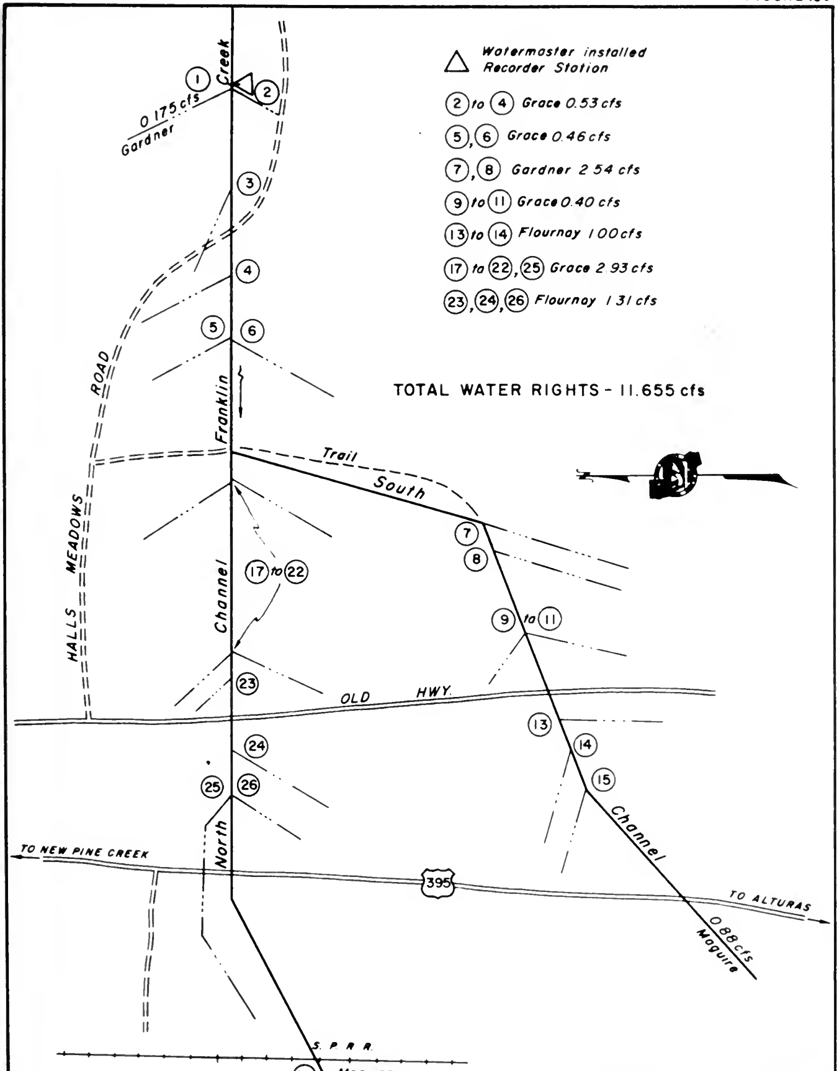


SCHEMATIC DIAGRAM OF DIVERSIONS FROM DAVIS CREEK

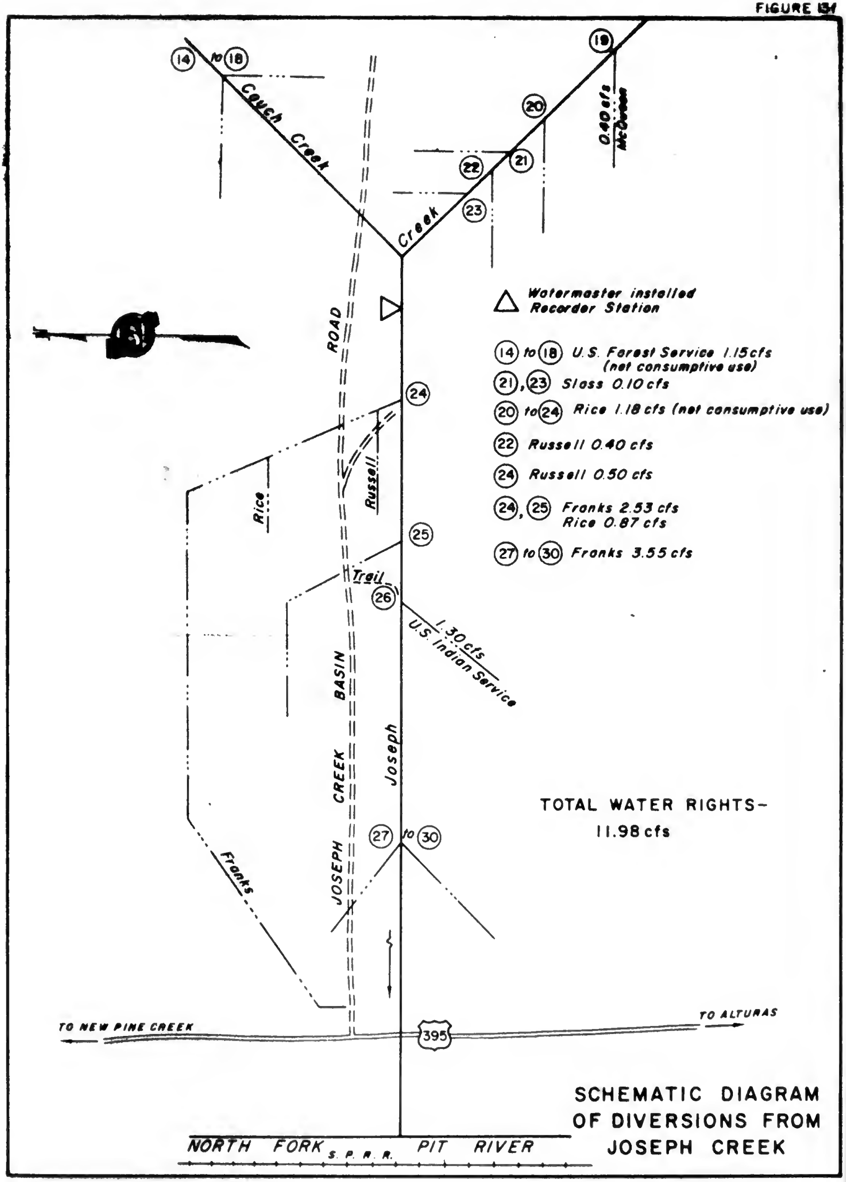
FIGURE 13d



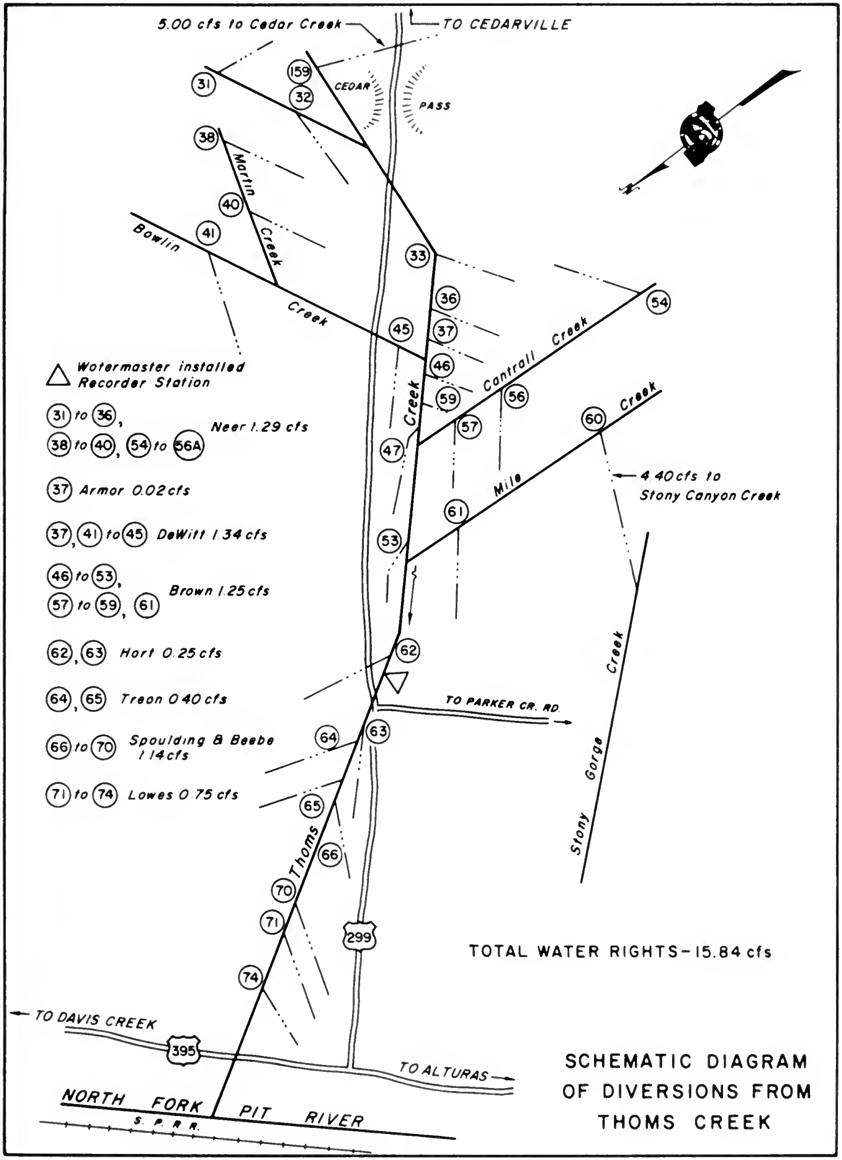
SCHEMATIC DIAGRAM OF DIVERSIONS FROM LINVILLE CREEK



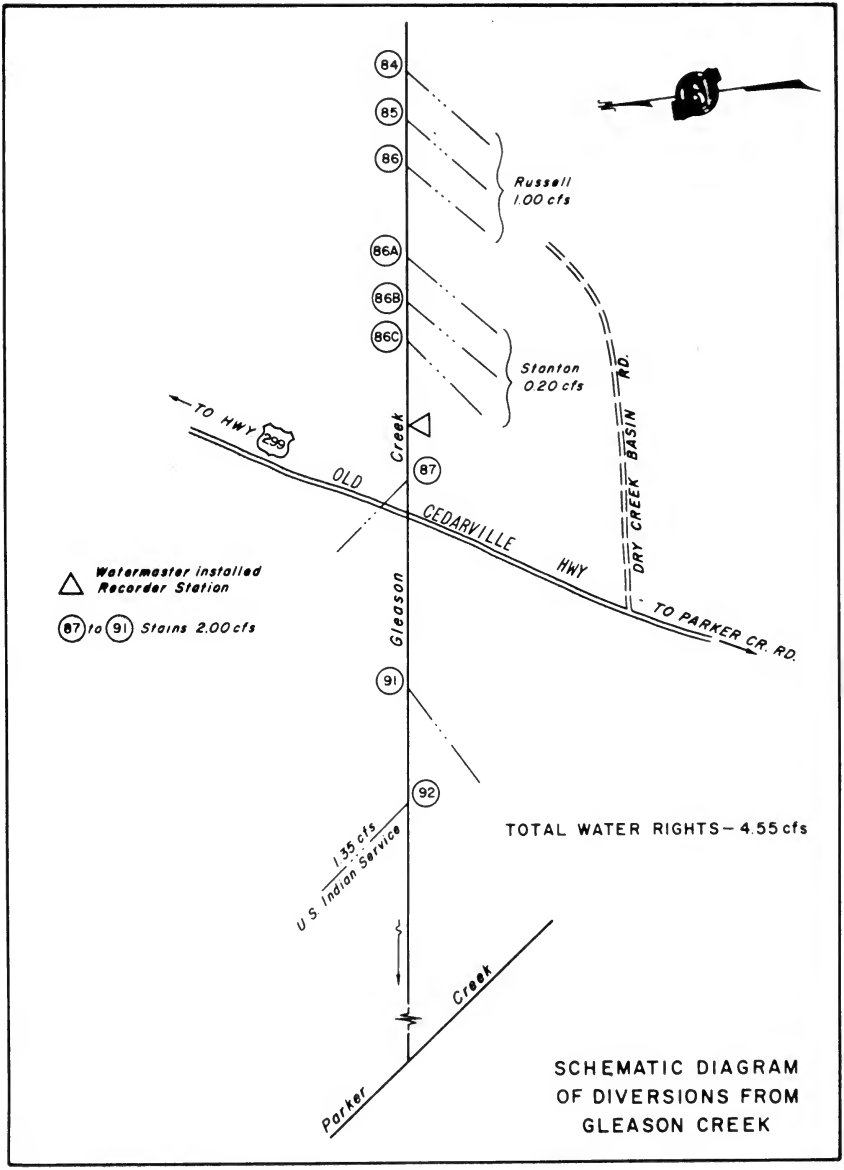
SCHEMATIC DIAGRAM OF DIVERSIONS FROM FRANKLIN CREEK



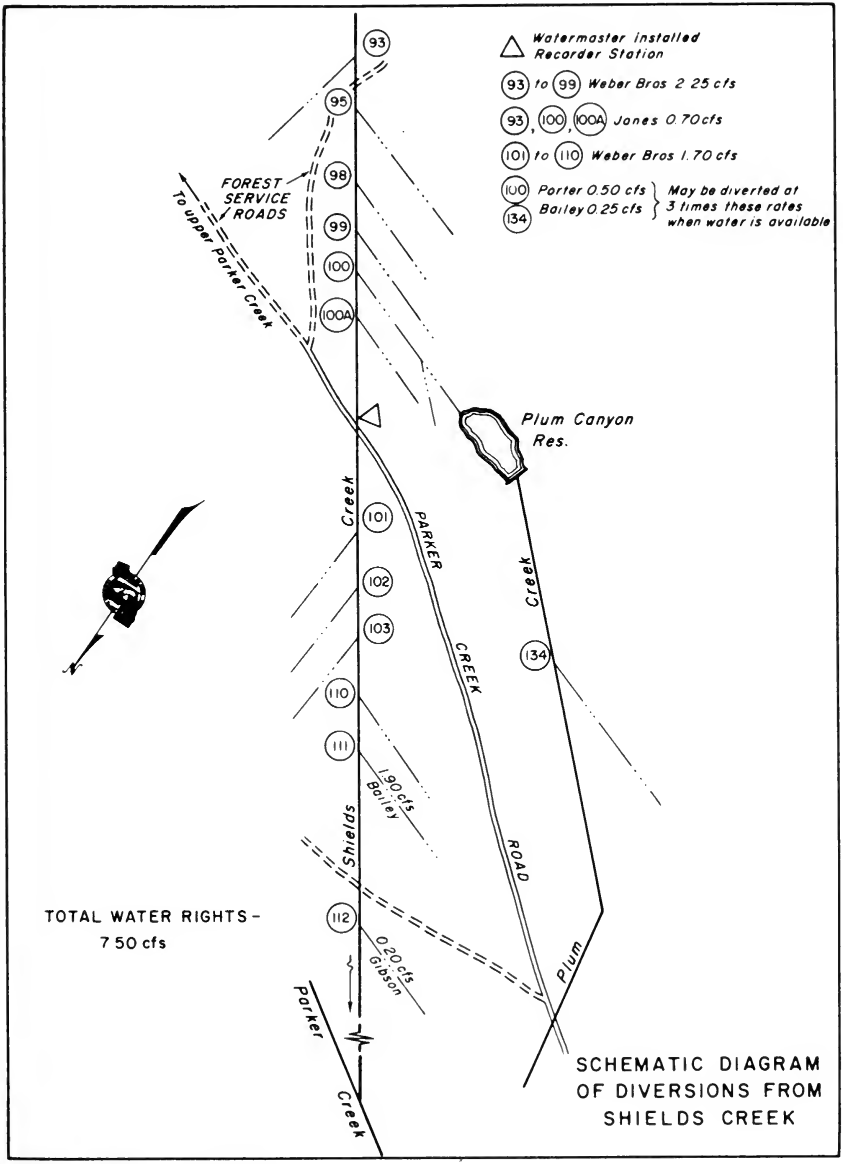
SCHEMATIC DIAGRAM OF DIVERSIONS FROM JOSEPH CREEK



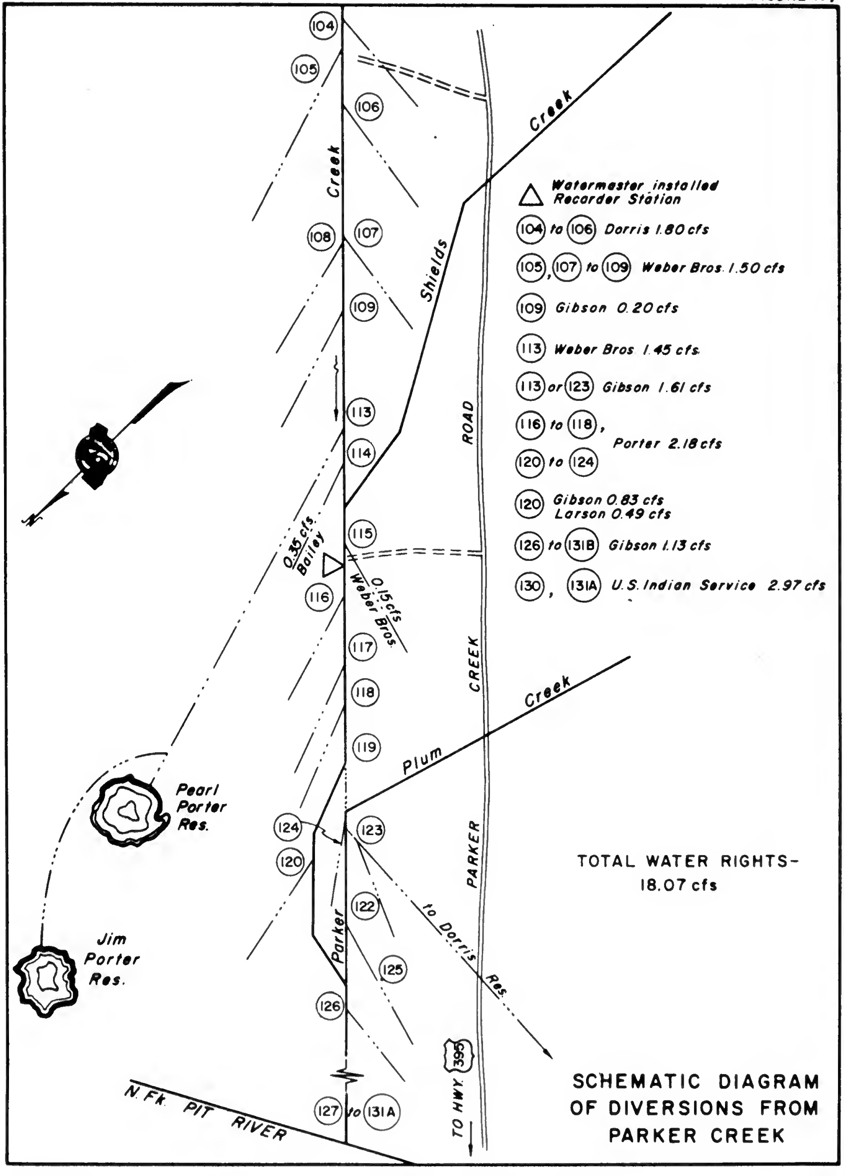
SCHEMATIC DIAGRAM OF DIVERSIONS FROM THOMS CREEK



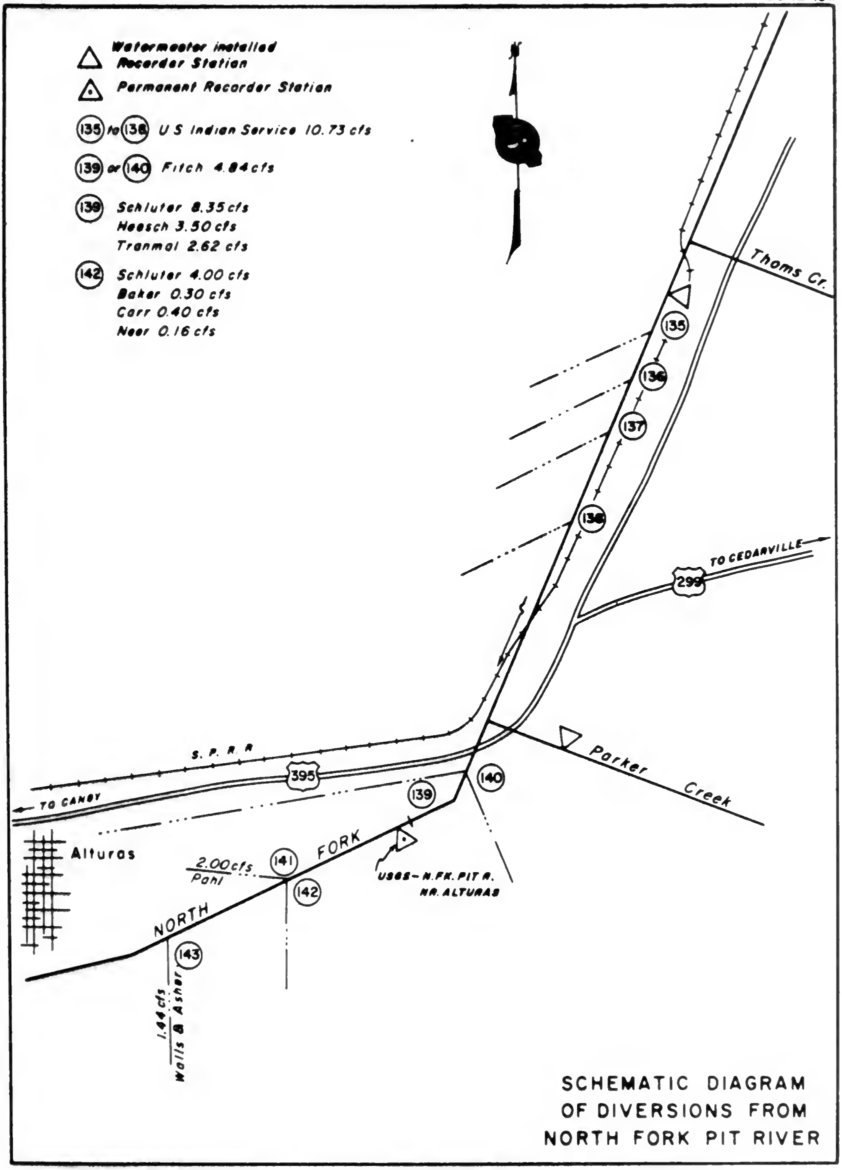
SCHEMATIC DIAGRAM OF DIVERSIONS FROM GLEASON CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM SHIELDS CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM PARKER CREEK



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
NORTH FORK PIT RIVER

Shackleford Creek Watermaster Service Area

The Shackleford Creek service area is located in western Siskiyou County near the town of Fort Jones in Scott Valley. There are 41 water right owners in the service area with total allotments of 64.73 cubic feet per second. The major sources of water supply for this service area are Shackleford Creek, which flows through the Central part of Quartz Valley, and its tributary, Mill Creek, which rises east of the headwaters of Shackleford Creek. Evans Creek, a small tributary to Mill Creek, enters from the south.

The service area encompasses the Quartz Valley region of Scott Valley and includes the entire agricultural area within the Shackleford Creek Basin. It is about two miles wide by six miles long with the main axis and drainage running from south to north. Elevations on the agricultural area range from about 3,100 feet at the south to about 2,650 feet at the confluence of Shackleford Creek and Scott River.

Schematic drawings of the Shackleford Creek stream system are presented as Figures 14 and 14a. pages 100 and 101.

Water Supply

The water supply for Shackleford Creek is derived from snowmelt runoff, springs and seepage, and supplemental stored water released from Cliff Lake and Campbell Lake. These lakes are located near the headwaters of Shackleford Creek.

The watershed of the Shackleford Creek stream system contains about 31 square miles, located in the heavily forested, steep, mountainous terrain of the northeasterly slopes of the Salmon Mountains. It varies in elevation from about 7,000 feet along its west rim to about 3,000 feet at the foot of the slopes bordering Quartz Valley. Snowmelt runoff is normally sufficient to supply all demands until the middle of July. The supply then usually decreases until the first part of August when water is released from Cliff and Campbell Lakes to maintain sufficient flow for second priority allotments in the Shackleford Ditch.

Method of Distribution

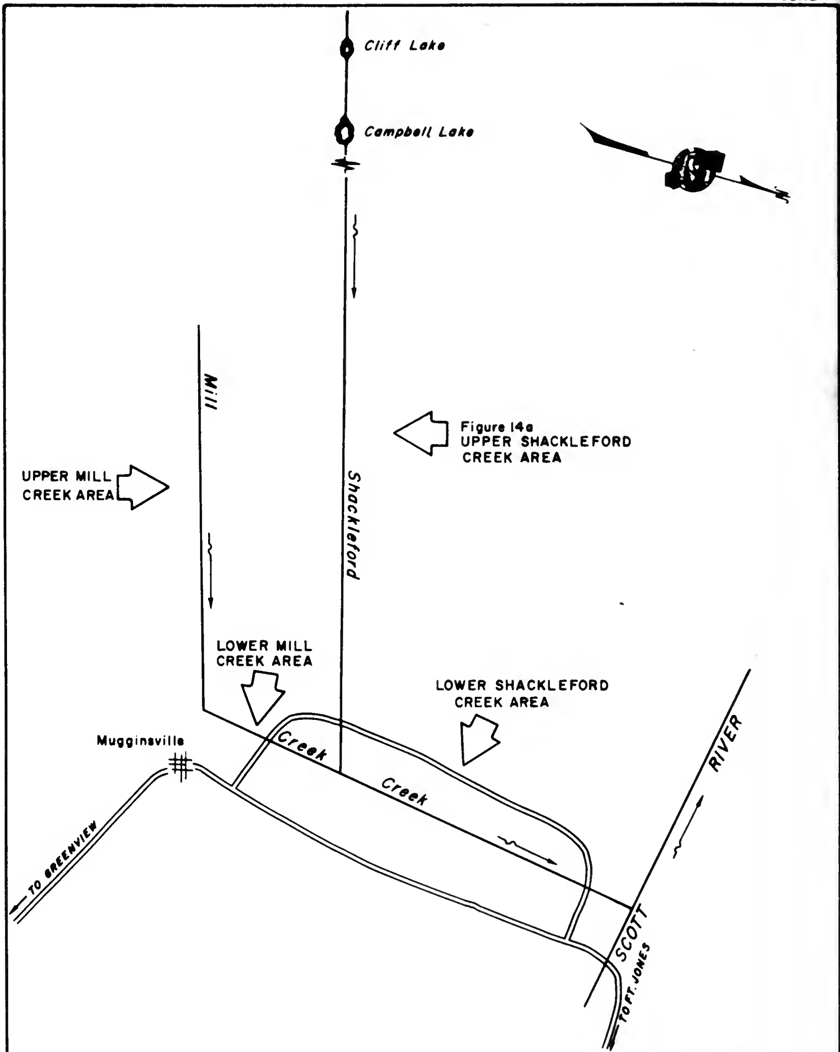
Irrigation is accomplished primarily by wild flooding of permanent pasture and alfalfa fields. Water is distributed by ditches and laterals to the places of use. Shackleford Ditch, the largest of these ditches, has a length of about 6 miles and a capacity of about 12 cubic feet per second.

The Shackleford Creek decree (see Table 1) provides four separate areas of distribution within the service area and establishes the following number of priority classes for these areas: Upper Shackleford Creek - seven; Lower Shackleford Creek - seven; Upper Mill Creek - three; and Lower Mill Creek - two.

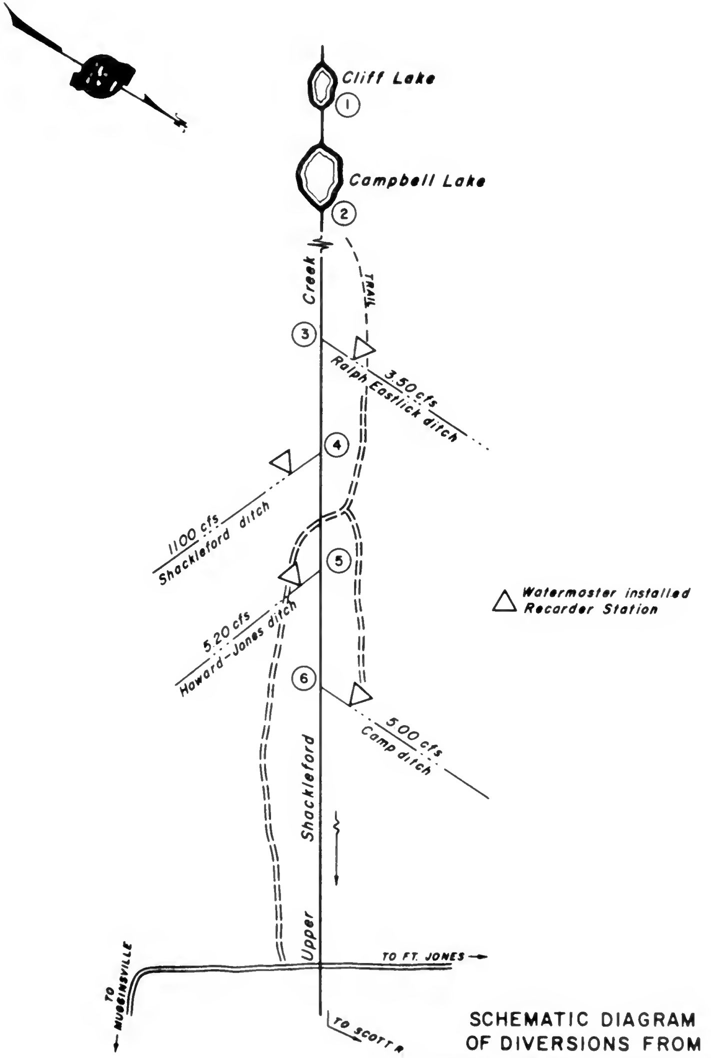
1971 Distribution

Watermaster service began June 1 in the Shackleford Creek service area and continued until September 30. John Nolan, Water Resources Technician II, was watermaster during this period.

The available water supply was above normal early in the season and about normal after August 1. Fourth priority water rights were shut off in early August, and as flow continued to recede, third priorities had to be shut off in late August. After that there were only first and second priority allotments available through September in decreasing amounts.



SCHEMATIC DIAGRAM
OF SHACKLEFORD CREEK
WATERMASTER SERVICE AREA



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
UPPER SHACKLEFORD CREEK

Shasta River Watermaster Service Area

The Shasta River service area is located in the central part of Siskiyou County, south and east of the town of Yreka. There are 107 water right owners in the service area with total allotments of 594.612 cubic feet per second.

The source of water supply is Shasta River and its several tributaries. The upper reaches of the service area are served by two groups of tributaries. One group, comprising Boles, Beaughan, Carrick, and Jackson Creeks, rises on the northwestern slopes of Mount Shasta. The other group, consisting of Dale and Eddy Creeks, and Shasta River west of U. S. Highway 99, rises on the eastern slopes of the Trinity Mountains. All these streams join the main stem Shasta River above Dwinnell Reservoir near the town of Weed. As the Shasta River flows northward from Dwinnell Reservoir to its confluence with the Klamath River, north of Yreka, it is joined by three major tributaries. Parks Creek, rising on the eastern slopes of the Trinity Mountains, enters from the west near the town of Gazelle. Big Springs Creek, from Big Springs Lake, enters from the east about a mile below Parks Creek. Little Shasta River, rising on the western slopes of the mountainous area between Butte Valley and Shasta Valley, enters from the east near the town of Montague.

The place of use is in Shasta Valley which is approximately 30 miles long and 30 miles wide. The valley has numerous small, coneshaped, volcanic hillocks scattered throughout its central portion that produce the effect of dividing the area into a number of distinctively separate parts. Because of these formations only about 141,000 acres of the approximately 507,000 acres within the valley are irrigable. The valley floor elevation averages approximately 3,000 feet.

A schematic drawing of each major stream system within the Shasta River service area is presented as Figures 15 through 15i, pages 110 through 119

Water Supply

The water supply for Shasta Valley is derived from snowmelt runoff, springs and underground flow, and occasional summer thundershowers. In several portions of the stream system the spring and underground flow is adequate to supply most allotments throughout the season. Much of the underground flow is derived from the northern slopes of Mount Shasta, which rises to an elevation of 14,162 feet at the south end of Shasta Valley. Although the snowpack on Mount Shasta is usually heavy, there is negligible surface runoff.

Parks Creek, Upper Shasta River, and Little Shasta River derive a major portion of their water supply from snowmelt runoff. This flow is usually adequate to supply all allotments until the middle of May.

Beaughan Creek, Carrick Creek, Shasta River from Boles Creek to Dwinnell Reservoir, Big Springs, and Lower Shasta River have enough runoff from springs to supply a large percentage of the allotments throughout the season.

Records of the daily mean discharge at several stream gaging stations in the Shasta River service area are presented in Tables 31 through 37. pages 106-109.

Method of Distribution

Irrigation of permanent pasture and alfalfa lands is accomplished principally by wild flooding. Much of the return water is recaptured and used on lower pasture lands. Sprinkling systems are used for irrigating some alfalfa and grain lands.

Water is diverted primarily by diversion dams and then conveyed by ditch or canal to the place of use. The largest and longest canal in the area is the Edson-Foulke Yreka Ditch, which has a capacity of about 60 cubic feet per second and a length of about 15 miles. Water is also supplied into ditch systems by pumped diversions. The largest of these belong to three irrigation districts. Several riparian water right owners also use pump diversions.

Many privately owned storage reservoirs exist in the area. Water storage from these reservoirs is used to supplement continuous-flow allotments.

The Shasta River decree (see Table 1) provides eight separate areas of distribution within the service area. This decree established the following number of priority classes for these areas: Shasta River above the confluence with Big Springs Creek - 43; Jackson Creek - 7; Parks Creek - 25; Shasta River below the confluence with Big Springs Creek - 29: and Little Shasta River - 7.

Three privately operated water districts within the service area have main diversions which are under supervision of the watermaster. These are: Shasta River Water Users Association, Grenada Irrigation District, and Big Springs Irrigation District. A fourth, the Montague Water Conservation District, stores water in Dwinnell Reservoir for use by the District and by natural flow water right owners immediately below the dam. The watermaster is responsible for diversion to these users.

A number of riparian water users along the Lower Shasta River were not included in the Shasta River decree. Owners of these undefined water rights are therefore not subject to watermaster supervision; consequently, in seasons of short supply these rights can be the cause of many water distribution problems.

1971 Distribution

Watermaster service began April 1 in the Shasta River service area and continued through September 30. John A. Nolan, Water Resources Technician II, was watermaster during this period.

The available water supply in the service area was generally above average during the season.

Parks Creek. The flow in Parks Creek was sufficient to supply all allotments (25 priorities) until late July. Some water continued to be diverted into the Yreka Ditch until mid-August. The first priority allotments of 6 cubic feet per second were available until September 1, after which time the first priority allotments were met in decreasing amounts for the remainder of the season. Water users downstream from the lowest first priority diversion received a portion of their allotments during the latter part of the season from return flow and from water rising in the gravel streambed.

Upper Shasta River. During early spring, enough water was available to satisfy all allotments (eight priorities). As the flow decreased, the following levels of priority allotments were met: August 12 - all of fourth priority; August 23 - all of third priority (Yreka Ditch main allotment); and September 13 (the seasonal low) - 20 percent of third priority.

Shasta River from Boles Creek to Dwinnell Reservoir. Boles Creek and Shasta River from Boles Creek to Dwinnell Reservoir were operated as one stream, under a long-standing oral agreement among the water right owners, with water being distributed on an equal and correlative basis. Adequate water was available to satisfy all allotments until the middle of August. All diversions were then cut to 65 percent. In late September the flow increased to again allow diversion of 100 percent of allotments.

Beaughan Creek. The flow of Beaughan Creek was sufficient to satisfy most

demands (five priorities) for the entire season. The creek is routed through a mill pond owned by the International Paper Company which uses approximately 35 percent of the flow for industrial purposes.

Carrick Creek. The water supply in Carrick Creek was adequate to satisfy all allotments (13 priorities) during the entire irrigation season.

Little Shasta River. Enough water was available in Little Shasta River to satisfy all fifth priority allotments (seven priorities) until late July, at which time full regulation became necessary to adequately distribute this priority. The flow continued to decrease to approximately 25 percent of the fourth priority allotments by the end of August. It then stayed constant for the remainder of the season.

The daily mean discharge of Little Shasta River near Montague is presented in Table 35, page 108. This runoff is augmented by rising water along the river channel, and by substantial inflow from Cleland Springs, a tributary approximately 2 miles below the stream gaging station. Therefore, considerably more water is available for distribution at downstream diversion points than in the discharge table.

Dwinnell Reservoir. Releases from Dwinnell Reservoir to Montague Water Conservation District commenced on April 20 and continued into October. Reservoir operation data from the 1971 season are Shown in Tables 33 and 34, pages 107 and 108.

By agreement with the Montague Water Conservation District, water users on Shasta River below Dwinnell Reservoir received stored water from the reservoir on demand in lieu of their natural flow rights. The agreement allotment totals and the amount delivered to each user this season are shown in the tabulation below.

Big Springs. The flow of Big Springs was sufficient to satisfy approximately 50 percent of third priority allotments through the first half of the season. Usually during July, August, and September, the flow in Big Springs increases as snowmelt from higher elevations on Mount Shasta percolates into the ground and reappears as surface flow at Big Springs Lake. As a result, Big Springs Irrigation District, a third priority water right owner, was able to pump its full allotment from late July through the remainder of the season.

Lower Shasta River. The water supply in Lower Shasta River was sufficient to satisfly all allotments (29 priorities) for the entire season.

DELIVERIES TO NATURAL FLOW WATER RIGHT OWNERS
BELOW DWINNELL RESERVOIR - 1971

Name of Water Right Owner	Allotment in Acre-Feet	Allotment Delivered from Dwinnell Reservoir	
		Acre-Feet	% of Allotment
Flying L Ranch	198	-0-	-0-
Frank Ayers	464	274.3	59.1
J. N. Taylor	1,200	1,187.5	99.0
Lake Shastina Properties, Inc.			
Hole-in-the Ground Ranch	596	-0-	-0-
Seldom Seen Ranch	924	793.0	85.8
Totals	3,382	2,254.8	66.7

SHASTA RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 31

SHASTA RIVER AT EDGEWOOD

Day	March	April	May	June	July	August	September	Day
1	82	99	69	115	40	10	9.8	1
2	80	96	76	76	35	9.8	9.8	2
3	82	94	142	66	28	8.9	9.8	3
4	82	96	168	66	26	8.5	9.4	4
5	78	96	147	67	25	8.5	9.8	5
6	76	94	113	75	22	8.5	9.8	6
7	75	94	120	82	21	8.5	10	7
8	73	90	305	83	21	8.1	10	8
9	66	181	243	85	20	8.5	9.8	9
10	67	155	199	88	21	8.1	9.8	10
11	90	109	196	82	20	8.1	9.8	11
12	168	87	220	78	19	8.1	9.8	12
13	120	90	211	78	16	8.1	10	13
14	105	87	168	73	14	8.1	11	14
15	94	90	142	66	13	7.8	10	15
16	99	92	135	66	12	8.1	10	16
17	94	90	124	67	13	8.5	10	17
18	87	82	98	67	15	8.9	11	18
19	83	75	96	69	24	8.9	9.4	19
20	83	90	83	67	23	8.9	9.4	20
21	85	87	73	63	17	8.9	8.9	21
22	131	73	69	53	16	8.9	9.8	22
23	278	73	73	56	15	9.8	9.4	23
24	181	73	90	52	14	9.4	9.8	24
25	317	66	126	56	14	9.4	10	25
26	452	63	181	73	13	9.8	11	26
27	286	66	131	62	13	9.4	12	27
28	217	62	155	51	12	8.5	12	28
29	138	62	155	44	12	8.5	15	29
30	117	66	135	42	11	8.5	18	30
31	109		124		11	9.8		31
Mean	132	89.3	141	68.9	186	8.8	10.5	Mean
Runoff In Acre-Feet	8120	5310	8660	4100	1140	539	623	Runoff In Acre-Feet

TABLE 32

PARKS CREEK ABOVE EDSON-FOULKE YREKA DITCH

Day	March	April	May	June	July	August	September	Day
1				95	38	3.6	12	1
2				91	35	4.7	10	2
3				82	33	6.2	3.5	3
4				88	32	6.2	3.1	4
5				93	31	11	3.1	5
6				100	30	16	3.1	6
7				105	28	17	3.1	7
8				104	28	16	3.1	8
9				100	25	11	3.1	9
10			158*	100	24	3.8	3.1	10
11			161	96	24	3.8	3.1	11
12			171	96	23	3.8	3.1	12
13			164	95	22	3.8	3.1	13
14			147	94	22	3.7	3.1	14
15			139	91	21	3.7	3.0	15
16			126	90	21	3.7	3.0	16
17			110	88	20	3.7	3.0	17
18			105	88	20	3.7	3.0	18
19			105	85	20	3.7	3.0	19
20			107	82	21	3.5	3.0	20
21			95	80	21	3.5	3.0	21
22			95	74	20	3.5	3.0	22
23			104	67	18	3.5	3.0	23
24			118	65	18	3.5	3.0	24
25			131	63	17	3.5	3.0	25
26			128	59	16	3.5	3.0	26
27			117	57	15	7.1	3.0	27
28			131	53	14	11	3.0	28
29			129	50	14	11	3.0	29
30			115	47	13	11	3.0	30
31			101		8.6	12		31
Mean			126	82.6	22.3	6.6	3.6	Mean
Runoff In Acre-Feet			5470	4910	1370	408	213	Runoff In Acre-Feet

* Beginning of Record

SHASTA RIVER WATERMASTER SERVICE AREA
October 1, 1970 through September 30, 1971 (in acre-feet)

TABLE 33
DAILY MEAN STORAGE IN DWINNELL RESERVOIR

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Day
1	13,250	12,440	18,770	25,850	37,170	40,280	44,690	45,750	48,350	43,860	35,490	27,130	1
2	13,140	12,480	19,020	26,000	37,320	40,300	44,800	45,680	48,330	43,630	35,180	26,980	2
3	13,090	12,540	19,330	26,070	37,420	40,320	44,890	45,700	48,290	43,410	34,930	26,800	3
4	12,980	12,650	19,610	26,150	37,560	40,340	44,980	46,150	48,220	43,180	34,590	26,660	4
5	12,850	12,910	20,030	26,220	37,700	40,360	45,030	46,370	48,150	42,900	34,090	26,450	5
6	12,760	13,140	20,520	26,300	37,800	40,380	45,110	46,470	48,080	42,630	33,820	26,270	6
7	12,650	13,260	21,010	26,370	37,900	40,380	45,200	46,530	47,930	42,460	33,480	26,100	7
8	12,590	13,370	21,570	26,450	38,000	40,400	45,250	46,920	47,730	42,080	33,140	25,930	8
9	12,510	13,610	21,990	26,520	38,100	40,420	45,390	47,280	47,590	41,810	32,920	25,780	9
10	12,460	13,910	22,270	26,670	38,190	40,420	45,790	47,460	47,480	41,420	32,640	25,630	10
11	12,400	14,140	22,480	26,750	38,340	40,420	45,900	47,640	47,320	41,130	32,400	25,480	11
12	12,350	14,500	22,690	26,850	38,500	40,540	45,990	47,860	47,180	40,840	32,160	25,330	12
13	12,290	14,650	22,830	26,930	38,670	40,790	46,060	47,950	47,030	40,620	31,920	25,100	13
14	12,230	14,790	23,010	27,050	38,840	40,840	46,110	48,260	46,890	40,350	31,600	24,920	14
15	12,180	14,880	23,180	27,570	39,010	40,880	46,190	48,310	46,780	40,110	31,360	24,730	15
16	12,140	14,960	23,600	28,340	39,180	41,010	46,240	48,310	46,550	39,820	31,070	24,550	16
17	12,150	15,030	23,850	29,920	39,350	41,130	46,350	48,310	46,370	39,530	30,800	24,350	17
18	12,100	15,120	24,050	31,360	39,430	41,160	46,380	48,310	46,170	39,260	30,530	24,140	18
19	12,080	15,200	24,170	32,920	39,570	41,220	46,420	48,270	45,910	38,970	30,240	23,980	19
20	12,080	15,280	24,280	33,920	39,650	41,250	46,380	48,130	45,810	38,750	29,970	23,780	20
21	12,080	15,330	24,420	34,600	39,720	41,280	46,380	47,860	45,630	38,500	29,720	23,600	21
22	12,090	15,360	24,570	35,060	39,820	41,300	46,370	47,680	45,430	38,290	29,420	23,400	22
23	12,120	15,400	24,680	35,400	39,890	41,640	46,330	47,590	45,200	38,040	29,230	23,250	23
24	12,160	15,720	24,750	35,720	39,910	42,070	46,330	47,460	44,980	37,820	29,000	23,110	24
25	12,190	16,280	24,870	35,920	39,960	42,370	46,280	47,410	44,710	37,560	28,820	23,010	25
26	12,230	16,690	24,980	36,080	40,010	43,180	46,200	47,770	44,710	37,270	28,610	22,870	26
27	12,260	17,090	25,080	36,300	40,040	43,720	46,110	47,860	44,550	36,930	28,330	22,790	27
28	12,290	17,520	25,190	36,430	40,080	43,990	46,040	48,000	44,400	36,640	28,070	22,690	28
29	12,320	18,000	25,290	36,570		44,220	45,970	48,110	44,260	36,370	27,800	22,620	29
30	12,350	18,450	25,400	36,740		44,400	45,840	48,170	44,080	36,030	27,580	22,550	30
31	12,380		25,670	36,880		44,580		48,170		35,780	27,350		31

SHASTA RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 34

DWINNELL RESERVOIR

Day	April	May	June	July	August	September	October	Day
1		45	29	66	72	56	12	1
2		47	27	67	72	51	7.9	2
3		31	24	67	73	48	7.9	3
4		10	24	67	76	43	8.2	4
5		9.8	24	74	78	43	16	5
6		6.8	31	73	76	45	22	6
7		9.1	46	74	75	48	29	7
8		10	61	78	73	48	29	8
9		15	65	79	69	45	29	9
10		27	66	79	69	38	29	10
11		27	62	79	72	35	29	11
12		28	59	74	72	43	29	12
13		30	59	73	73	53	27	13
14		33	60	73	77	53	21	14
15		36	67	66	77	51	13**	15
16		46	68	69	77	47		16
17		65	72	71	77	47		17
18		63	72	73	78	47		18
19		63	72	77	78	47		19
20	37*	65	73	76	78	50		20
21	33	70	79	68	78	53		21
22	36	70	79	64	78	50		22
23	34	68	79	62	70	47		23
24	34	61	79	59	66	43		24
25	34	61	79	61	63	36		25
26	35	44	79	69	63	33		26
27	38	39	76	74	62	29		27
28	38	28	65	72	61	27		28
29	38	28	64	72	60	20		29
30	41	33	66	72	58	20		30
31		39		72	58			31
Mean	36.2	39.0	60.2	71.0	71.2	43.2	20.6	Mean
Runoff in Acre-Feet	789	2400	3580	4360	4380	2570	613	Runoff in Acre-Feet

* Beginning of Record
** End of Record

TABLE 35

LITTLE SHASTA RIVER NEAR MONTAGUE

Day	March	April	May	June	July	August	September	Day
1	18	58	77	92	27	12	9.2	1
2	20	63	80	86	26	12	9.1	2
3	20	66	151	78	25	12	8.7	3
4	19	71	140	71	24	11	8.7	4
5	17	76	113	67	23	11	8.4	5
6	18	76	103	64	22	11	8.9	6
7	20	71	111	62	21	11	9.1	7
8	20	66	134	60	21	11	8.7	8
9	20	75	125	59	22	11	8.5	9
10	19	79	121	59	21	10	8.5	10
11	29	69	119	55	20	10	8.3	11
12	44	66	129	53	19	9.9	8.3	12
13	39	65	130	50	18	9.4	8.1	13
14	33	61	120	47	18	9.4	8.0	14
15	30	63	116	45	17	9.7	7.9	15
16	29	63	105	43	17	9.6	7.8	16
17	26	62	99	42	16	9.6	7.7	17
18	26	63	97	43	16	9.5	7.6	18
19	32	61	95	42	16	9.4	7.7	19
20	48	66	90	39	16	9.2	7.6	20
21	58	66	86	37	16	9.4	7.7	21
22	94	67	86	36	15	9.5	7.6	22
23	159	68	85	35	14	9.2	7.5	23
24	124	54	83	33	14	8.9	7.5	24
25	113	49	88	36	14	8.7	7.5	25
26	135	58	97	44	13	8.7	8.2	26
27	85	68	86	35	13	8.7	8.6	27
28	75	71	94	32	13	8.7	8.7	28
29	77	74	85	30	12	8.5	12	29
30	72	78	81	28	12	9.1	10	30
31	59		85		12	9.9		31
Mean	50.9	66.4	104	50.1	17.8	9.9	8.4	Mean
Runoff in Acre-Feet	3130	3953	6369	2981	1097	609	500	Runoff in Acre-Feet

SHASTA RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 36

SHASTA RIVER AT MONTAGUE-GRENADA HIGHWAY BRIDGE

Day	March	April	May	June	July	August	September	Day
1					76	20	21	1
2					82	20	21	2
3					59	20	21	3
4					52	20	24	4
5					45	18	26	5
6					38	18	35	6
7					34	19	32	7
8					34	20	31	8
9					33	22	30	9
10					30	19	30	10
11					29	23	33	11
12					27	26	36	12
13					31	24	37	13
14					27	22	30	14
15					29	20	30	15
16				75*	27	22	29	16
17				69	25	23	27	17
18				62	27	21	34	18
19				65	26	26	48	19
20				61	42	26	50	20
21				68	31	29	48	21
22				85	38	32	65	22
23				59	32	23	61	23
24				53	29	22	86	24
25				60	30	23	61	25
26				66	25	18	61	26
27				85	23	17	60	27
28				81	22	19	56	28
29				86	24	22	68	29
30				80	22	22	83	30
31					18	24		31
Mean				69.0	33.6	21.8	41.6	Mean
Runoff In Acre-Feet				2050	2070	1350	2490	Runoff In Acre-Feet

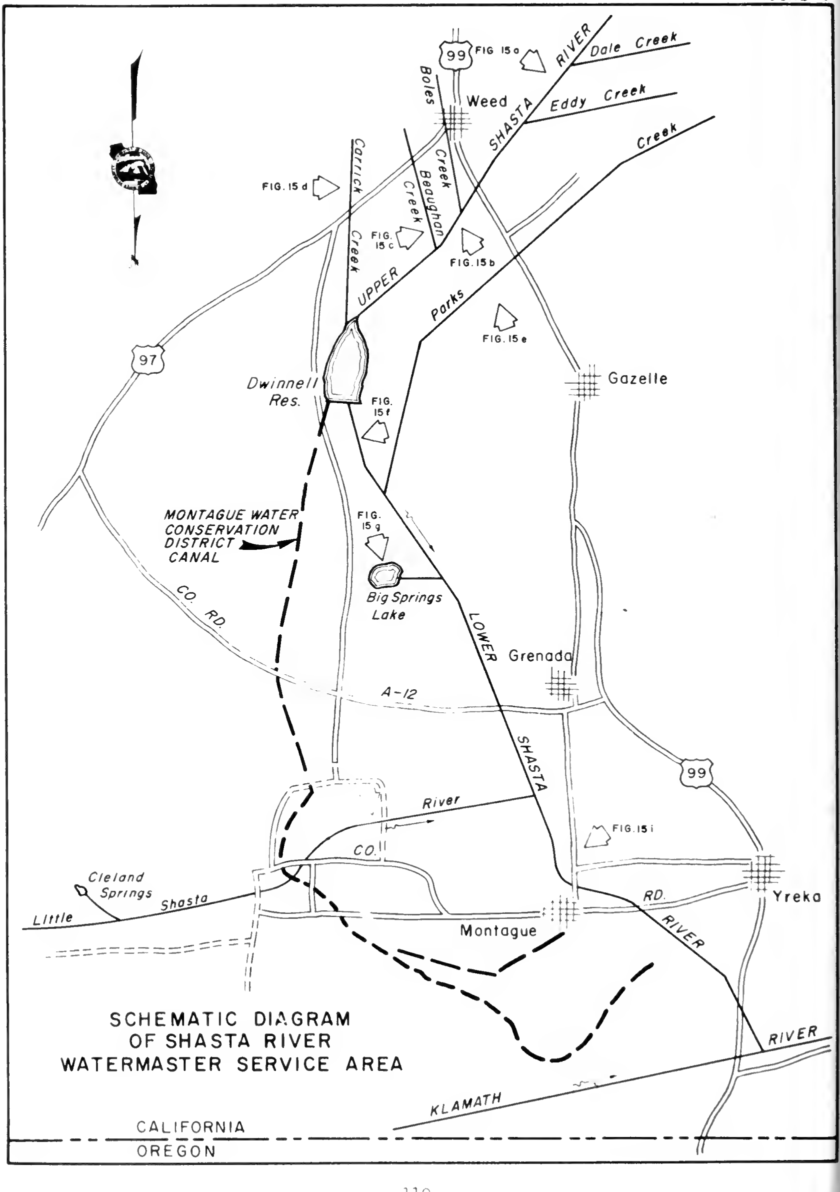
* Beginning of Record

TABLE 37

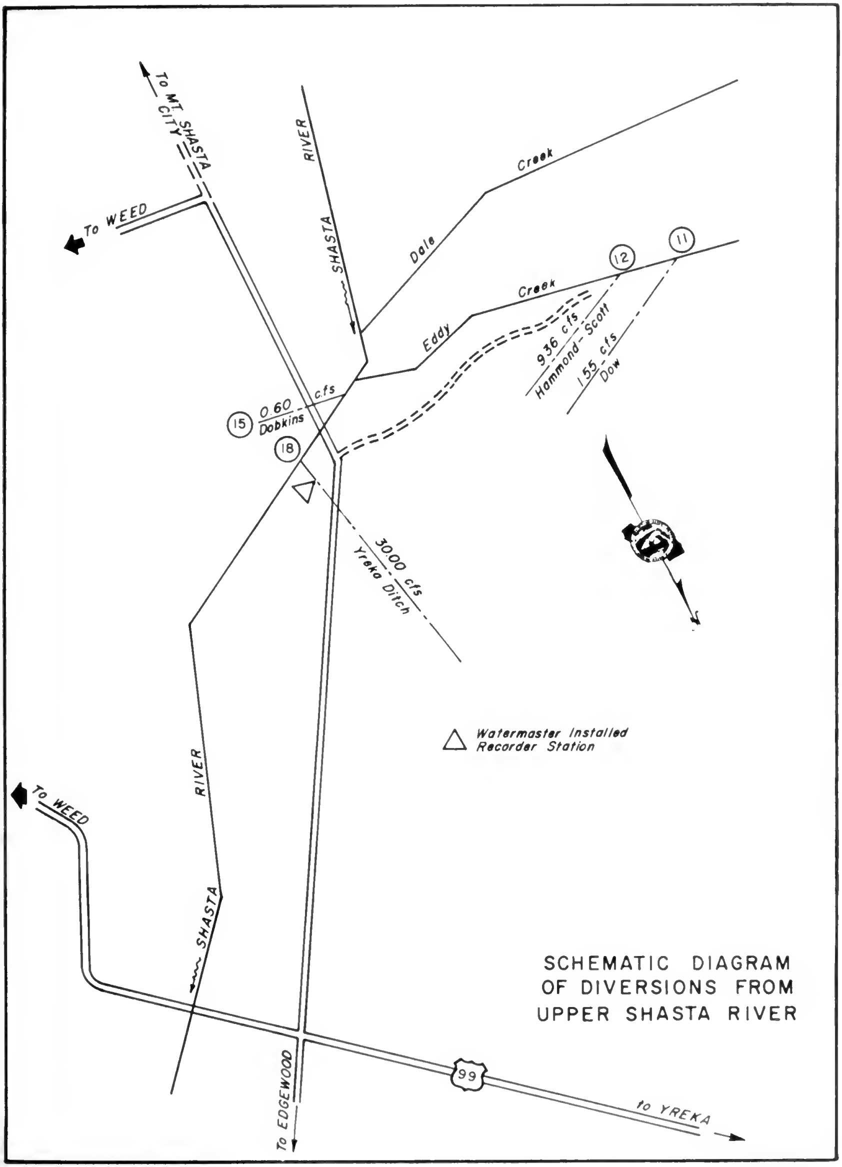
SHASTA RIVER NEAR YREKA

Day	March	April	May	June	July	August	September	Day
1	287	470	248	443	156	33	47	1
2	257	441	261	472	146	36	46	2
3	270	422	432	433	128	28	48	3
4	267	403	588	366	120	33	54	4
5	259	392	591	304	103	29	50	5
6	259	382	527	261	80	23	87	6
7	258	381	439	247	64	18	71	7
8	256	356	486	231	65	23	65	8
9	255	366	537	197	66	28	62	9
10	261	393	520	194	67	26	63	10
11	276	373	437	186	61	22	68	11
12	483	350	376	182	53	38	76	12
13	592	323	382	169	51	30	84	13
14	462	296	354	187	54	32	69	14
15	398	287	329	164	42	30	55	15
16	406	277	329	145	51	31	60	16
17	427	275	322	134	44	38	60	17
18	386	258	300	124	45	41	60	18
19	359	226	255	127	53	40	87	19
20	345	240	215	124	67	41	103	20
21	352	286	208	124	71	45	97	21
22	387	284	209	117	68	58	118	22
23	650	293	202	114	65	52	124	23
24	703	274	197	106	56	36	125	24
25	712	280	204	117	51	41	129	25
26	1290	260	408	134	51	40	121	26
27	870	234	428	168	40	34	121	27
28	695	234	384	168	36	27	115	28
29	612	210	351	176	37	35	130	29
30	584	218	307	160	38	35	172	30
31	505		308		37	49		31
Mean	454	315	359	202	66.6	34.5	84.8	Mean
Runoff In Acre-Feet	27890	18770	22080	12010	4090	2120	5050	Runoff In Acre-Feet

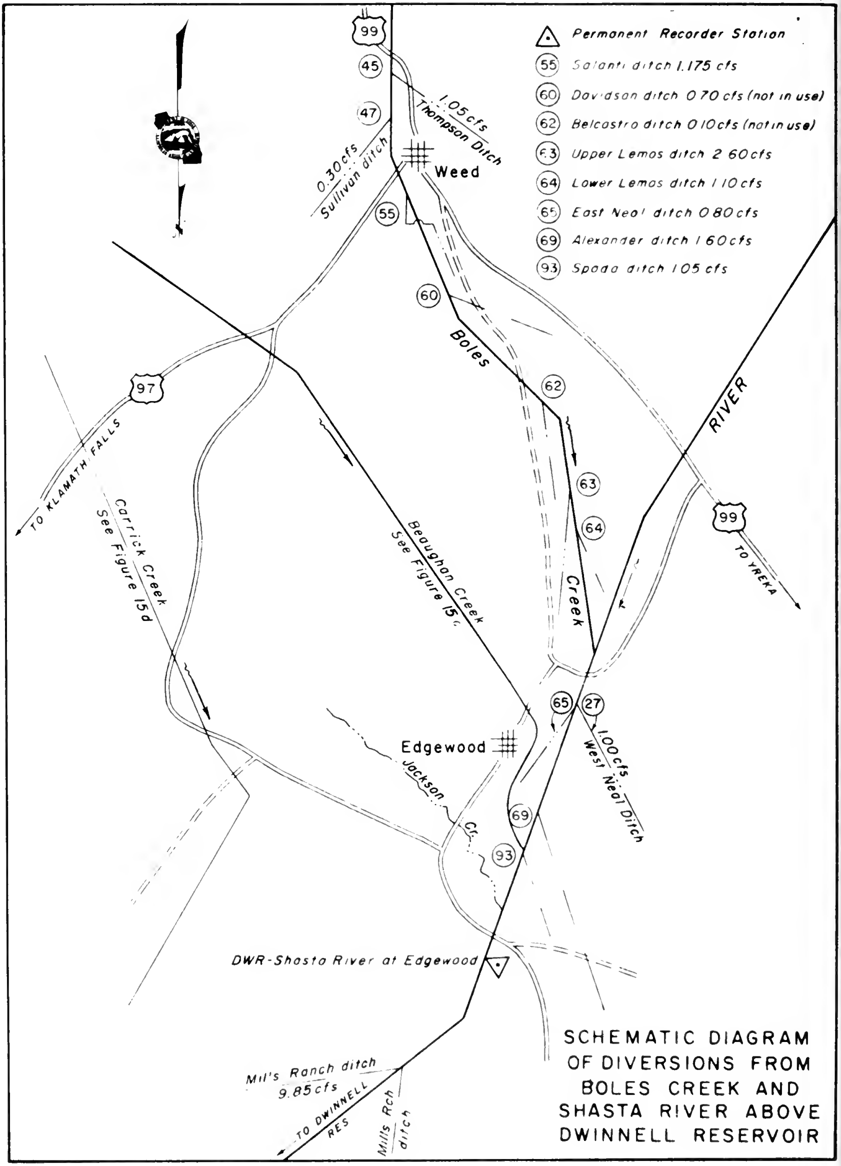
FIGURE 15



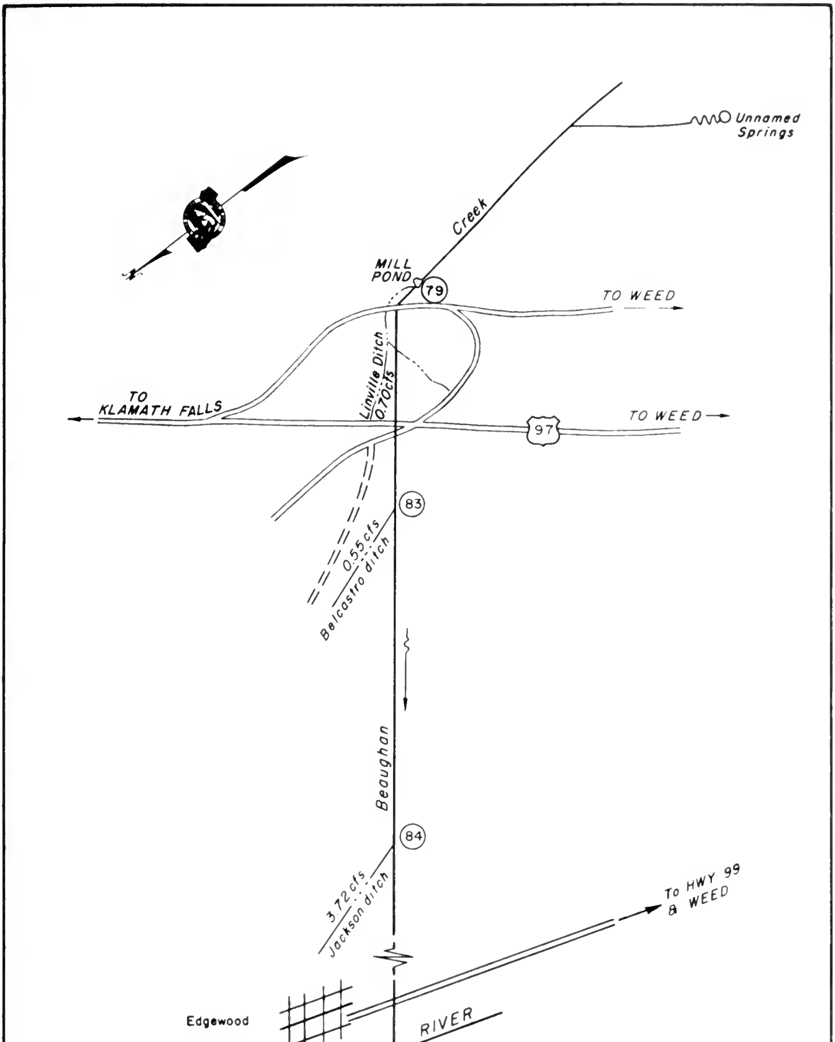
SCHEMATIC DIAGRAM
OF SHASTA RIVER
WATERMASTER SERVICE AREA



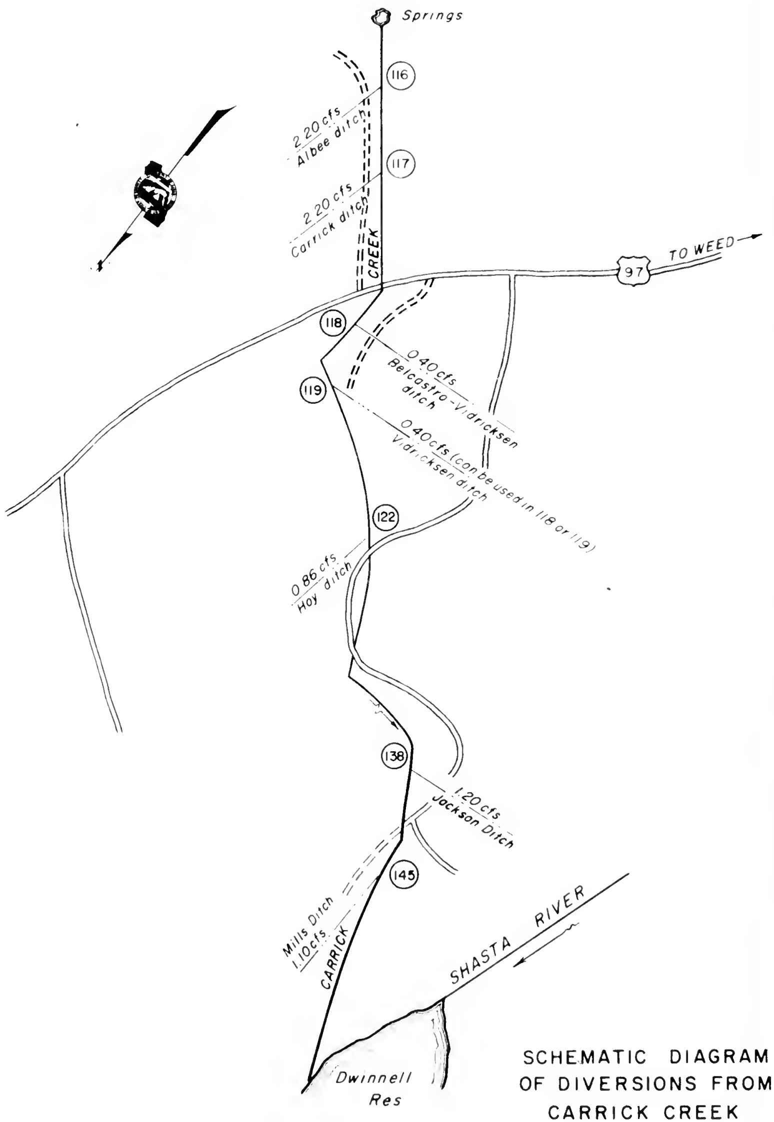
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
UPPER SHASTA RIVER



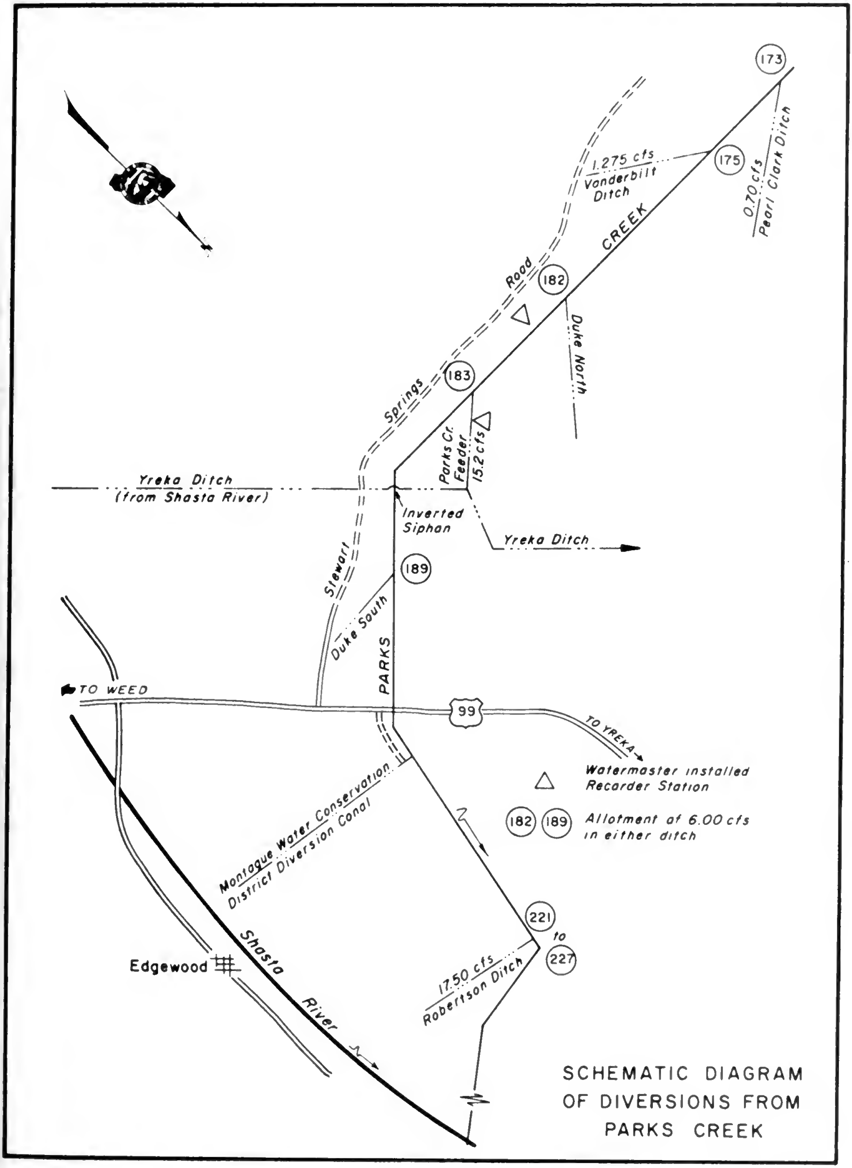
SCHEMATIC DIAGRAM OF DIVERSIONS FROM BOLES CREEK AND SHASTA RIVER ABOVE DWINNELL RESERVOIR



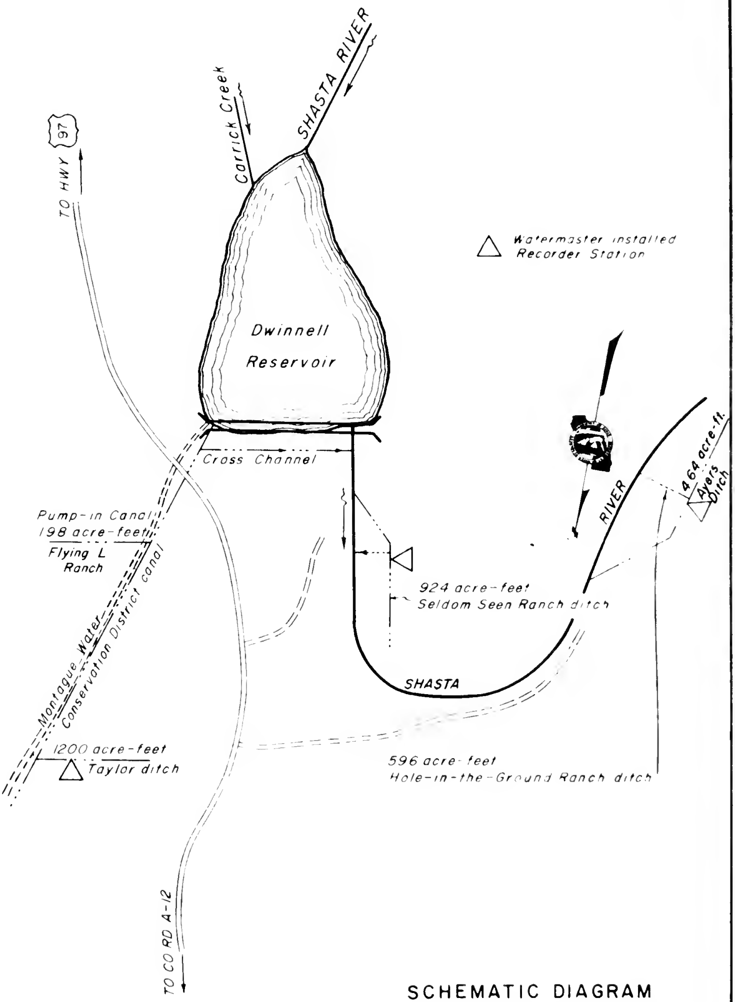
SCHEMATIC DIAGRAM OF DIVERSIONS FROM BEAUGHAN CREEK



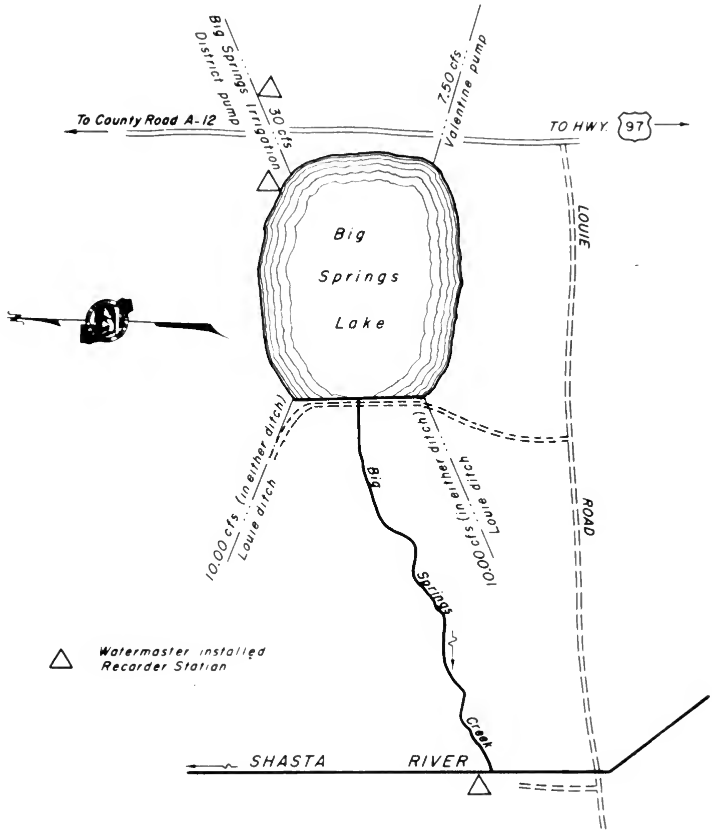
SCHEMATIC DIAGRAM OF DIVERSIONS FROM CARRICK CREEK



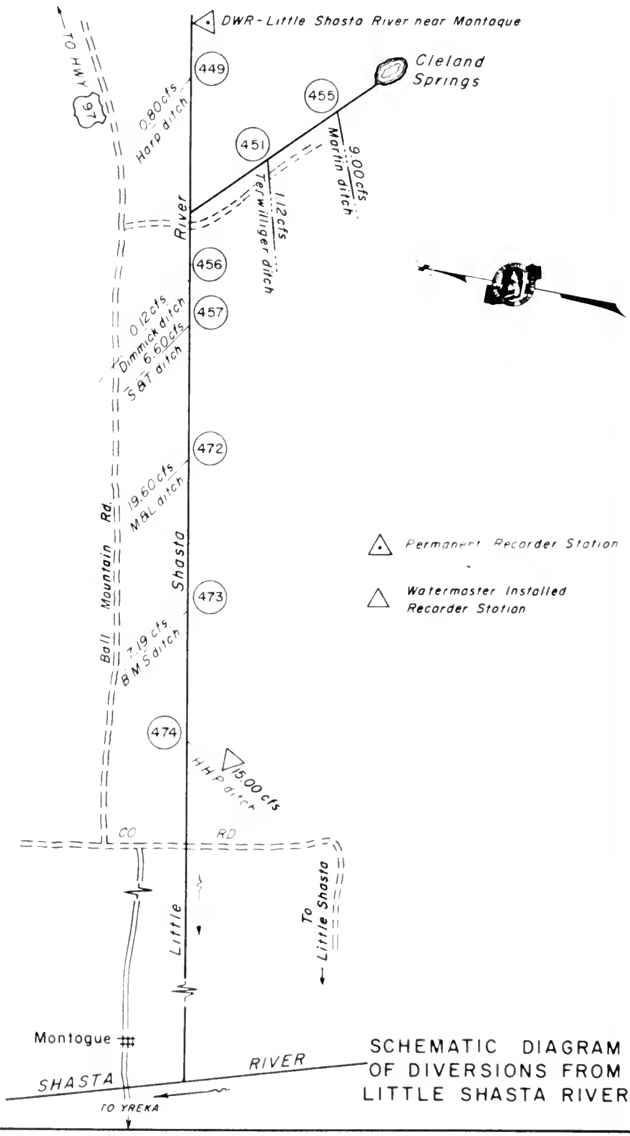
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
PARKS CREEK



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
SHASTA RIVER PRIOR RIGHTS
BELOW DWINNELL RESERVOIR

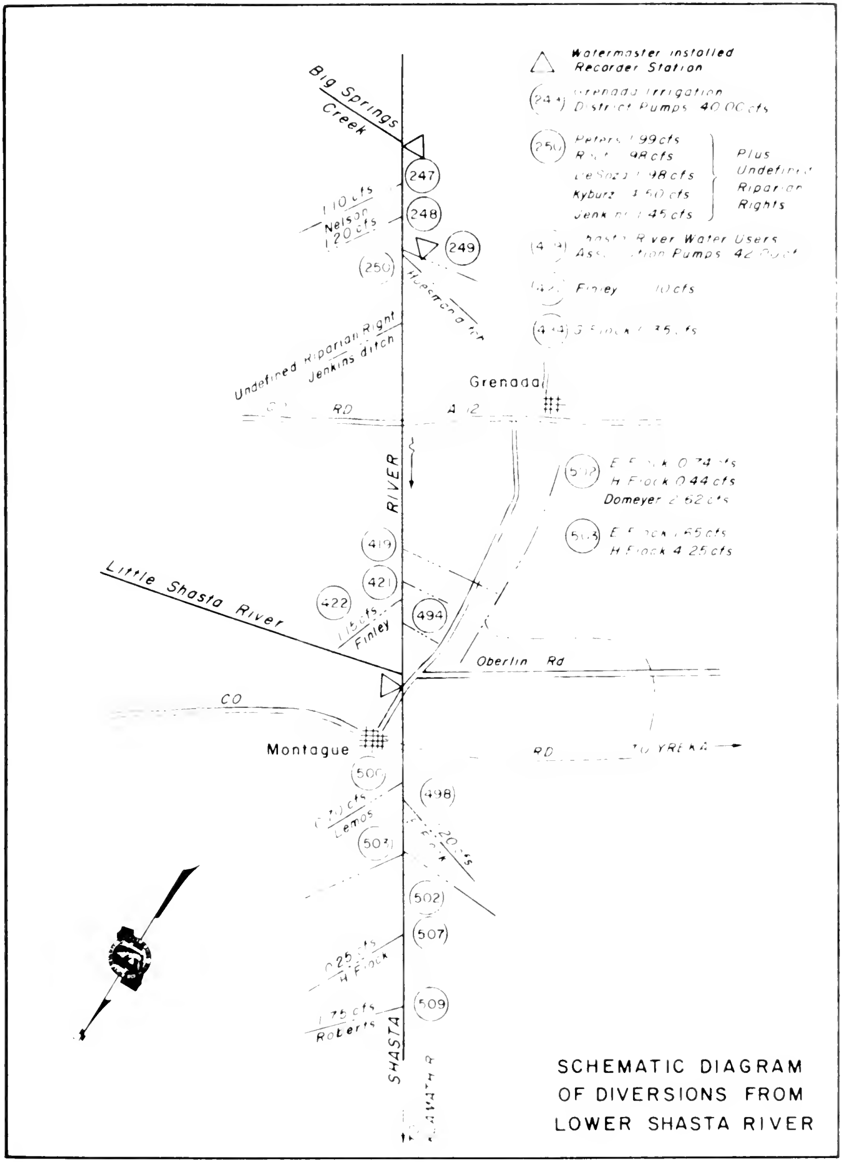


SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
BIG SPRINGS LAKE



SCHEMATIC DIAGRAM OF DIVERSIONS FROM LITTLE SHASTA RIVER

FIGURE



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
LOWER SHASTA RIVER

South Fork Pit River Watermaster Service Area

The South Fork Pit River service area is located primarily in Modoc County with a small portion extending into the northern part of Lassen County. There are 36 water right owners in the area with total allotments of 350.97 cubic feet per second.

Water supply for this service area is obtained from the South Fork Pit River and its tributaries which rise on the western slopes of the Warner Mountains. The river flows in a westerly direction, entering South Fork Valley near Likely. It then flows north through the valley to its confluence with the North Fork Pit River at Alturas. The South Fork Pit River is joined from the east by Fitzhugh Creek near the middle of the valley and by Pine Creek just south of Alturas.

The major area of water use is in South Fork Valley between Likely and Alturas. South Fork Valley is about 16 miles long and 3 miles wide with the valley floor lying at an elevation of about 4,500 feet. The valley is bounded on both sides by a rocky plateau that separates it from the surrounding mountains.

A schematic drawing of each major stream system within the South Fork Pit River service area is presented as Figures 16 through 16d, pages 125 through 129.

Water Supply

The water supply for Pine Creek is derived mostly from snowmelt runoff. Therefore, runoff is usually small in the early spring, increases to a peak in May as temperatures rise, and then gradually decreases throughout the remainder of the season. Water users supplement their irrigation supplies from other sources whenever possible.

The water supply for Fitzhugh Creek consists of snowmelt runoff early in the season and supplemental water diverted from Mill Creek above Jess Valley later in the season. Surplus water from Fitzhugh Creek is diverted into the Payne and French Reservoirs through Payne-French Ditch (Diversion 136) until about June, when the diversion is closed to supply downstream allotments. By July the creek has normally receded until only first priority allotments are available.

Payne Ditch (Diversion 1) is opened to import water from Mill Creek to Fitzhugh Creek when the snow has melted enough to allow access. This imported water is rediverted from North Fork Fitzhugh Creek through the Bowman Ditch to the Bowman Ranch. Return flow from Bowman Ranch to the creek is rediverted through Diversion 136 for stockwatering purposes in the Payne-French Ditch.

The water supply for the South Fork Pit River is derived primarily from snowmelt runoff, supplemented by water released from West Valley Reservoir. A number of streams, which rise at high elevations, collect at the mouth of Jess Valley to form the South Fork Pit River. West Valley Reservoir is fed by Cedar Creek and releases to South Fork below Jess Valley via West Valley Creek.

Most of the water users on the South Fork Pit River, except those in Jess Valley, are in the South Fork Irrigation District. The district stores water in West Valley Reservoir, which has a capacity of 22,240 acre-feet, and releases it to the South Fork Pit River as a supplemental supply when the natural flow becomes insufficient to meet demands. This usually occurs during the middle of June. Reservoir releases, together with the natural flow, are distributed by the watermaster in cooperation with the Board of Directors of the irrigation district. Except for extremely dry years, natural

flow, combined with stored water, is sufficient to supply all demands for water on the South Fork Pit River throughout the irrigation season.

Records of the daily mean discharge of the several stream gaging stations in the area are presented in Tables 38 through 41, pages 123 and 124.

Method of Distribution

Irrigation of the lands along tributary streams is accomplished by flooding through use of small lateral ditches. The water is distributed on a continuous-flow basis to each user through gravity-flow diversion systems. In some cases, rotation is practiced among several users.

Most irrigation in the South Fork Pit River area is by the check and border method. The lands receive water essentially on demand by supplementing natural flow with releases from West Valley Reservoir. However, irrigation between the various ranches must be coordinated to eliminate large peak demands from the reservoir and to use the return flow as much as possible. Actual distribution varies each year as there is no specific irrigation schedule in use.

The South Fork Pit River decree and the Pine Creek Agreement (see Table 1) establish a two-priority class system of distribution for the Fitzhugh Creek and Pine Creek stream systems. Distribution to the South Fork Pit River users (the decree provides for a two-priority class system) is carried out on an equal and correlative basis in accordance with the water requirements for each ranch. This method of operation was made possible by construction of West Valley Reservoir in 1937.

1971 Distribution

Water Resources Engineering Associate Kenneth E. Morgan was watermaster in the South Fork Pit River service area from May 3 to September 30.

The water supply for 1971 was above average throughout the irrigation season. A winter-type storm from May 29 through June 1 produced about 34 inches of new snow in the Warner Mountains. Warm temperatures followed from June 2 to 7, melting the snow and causing flooding of grain lands and meadows.

Pine Creek. A surplus water supply existed in Pine Creek until after haying operations, which were about August 9. From then until late September the flow gradually decreased to approximately 100 percent of first priority allotments (two priorities).

Fitzhugh Creek. Regulation of Fitzhugh Creek began in early July. At that time surplus water was still available. Diversion through the Payne Ditch from Mill Creek was begun on July 17. This imported water was added to the Bowman Ditch allotment in accordance with the decree. At the end of the season the available water supply had decreased to about 60 percent of the first priority allotments (two priorities).

South Fork Pit River. The natural flow of the South Fork Pit River was sufficient to meet all demands until July 29. Releases from West Valley Reservoir began at that time and continued until September 27. The reservoir reached its capacity of 22,240 acre-feet around the last of March. At the end of September, 11,500 acre-feet remained in storage.

SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 38

SOUTH FORK PIT RIVER NEAR LIKELY

Day	March	April	May	June	July	August	September	Day
1	4.9	217	318	1180	392	184	147	1
2	5.2	215	324	1220	356	182	111	2
3	5.5	197	356	1100	324	184	103	3
4	5.8	193	454	1010	303	180	103	4
5	6.1	193	484	876	286	171	101	5
6	6.3	207	486	820	269	167	105	6
7	6.8	211	458	740	256	165	124	7
8	7.5	197	470	684	253	160	116	8
9	8.7	207	533	652	242	153	109	9
10	11	197	551	652	228	150	97	10
11	15	193	556	640	223	158	70	11
12	50	191	584	595	217	176	72	12
13	80	197	622	560	197	195	56	13
14	50	228	652	538	180	181	51	14
15	25	223	628	506	176	203	63	15
16	20	234	610	484	173	107	63	16
17	25	251	556	466	157	59	65	17
18	16	267	497	442	146	142	69	18
19	28	272	462	423	146	165	69	19
20	28	278	434	395	135	186	72	20
21	32	306	420	377	130	203	73	21
22	25	303	398	365	125	197	74	22
23	113	303	389	341	113	193	73	23
24	191	332	383	324	103	201	86	24
25	234	356	386	324	97	211	58	25
26	394	365	386	423	94	211	65	26
27	332	313	402	575	89	201	66	27
28	283	319	510	616	80	201	53	28
29	258	313	900	528	113	203	53	29
30	258	319	1030	446	143	188	65	30
31	232		1050		169	176		31
Mean	88.9	253	525	610	191	176	80.4	Mean
Runoff In Acre-Feet	5470	15070	32270	36300	11730	10840	4780	Runoff In Acre-Feet

TABLE 39

WEST VALLEY CREEK BELOW WEST VALLEY RESERVOIR

Day	March	April	May	June	July	August	September	Day
1						115	118	1
2						115	90	2
3						115	79	3
4						115	79	4
5						115	79	5
6						115	79	6
7						115	79	7
8						115	79	8
9						115	78	9
10						122	60	10
11						131	37	11
12						147	37	12
13						160	27	13
14						159	23	14
15						159	31	15
16						59	31	16
17						21	31	17
18						109	32	18
19						137	32	19
20						144	32	20
21						164	32	21
22						164	32	22
23						164	32	23
24						170	27	24
25						177	14	25
26						174	14	26
27						174	7 0**	27
28						172		28
29					49*	170		29
30					98	154		30
31					115	141		31
Mean					87.3	136	47.6	Mean
Runoff In Acre-Feet					520	8344	2561	Runoff In Acre-Feet

* Beginning of Releases
** End of Releases

SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 40

FITZHUGH CREEK BELOW DIVERSION NO. 137

Day	March	April	May	June	July	August	September	Day
1					28	9.2	5.8	1
2					24	7.9	5.8	2
3					23	7.2	5.8	3
4					21	7.0	5.8	4
5					19	6.6	5.4	5
6					16	6.8	5.4	6
7					15	6.4	5.4	7
8					15	6.2	5.8	8
9					14	6.2	5.8	9
10					13	6.2	5.6	10
11					12	6.2	5.8	11
12					11	6.2	5.5	12
13					11	6.2	5.4	13
14					10	6.0	5.2	14
15					10	6.0	5.0	15
16					10	6.0	4.8	16
17					9.5	5.8	4.6	17
18					10	5.6	4.8	18
19					14	5.4	4.8	19
20					12	5.4	4.8	20
21					11	5.0	4.8	21
22					10	5.4	4.4	22
23				29*	9.5	5.6	3.2	23
24				26	8.6	5.4	3.0**	24
25				23	8.1	5.4		25
26				56	7.9	5.4		26
27				47	7.2	5.6		27
28				71	7.2	5.6		28
29				36	7.4	5.7		29
30				29	7.4	5.8		30
31					7.2	6.0		31
Mean				39.6	12.4	6.1	5.1	Mean
Runoff In Acre-Feet				629	768	375	242	Runoff In Acre-Feet

* Beginning of Record
** End of Record

TABLE 41

PINE CREEK NEAR ALTURAS

Day	March	April	May	June	July	August	September	Day
1	13	16	32	205	77	34	23	1
2	13	16	33	246	70	31	23	2
3	13	16	44	118	65	30	23	3
4	13	17	97	91	63	29	22	4
5	13	17	55	87	60	28	22	5
6	14	18	47	85	57	28	24	6
7	14	18	46	84	55	27	24	7
8	13	18	56	86	53	27	22	8
9	13	18	63	90	51	27	22	9
10	13	19	58	106	49	26	22	10
11	13	19	61	107	48	27	22	11
12	25	18	66	108	47	26	22	12
13	32	18	70	108	46	26	22	13
14	26	20	70	106	44	25	22	14
15	21	21	76	107	43	25	22	15
16	23	21	75	108	42	25	22	16
17	23	23	70	108	41	25	21	17
18	19	30	71	108	47	25	22	18
19	29	32	70	103	46	24	22	19
20	45	27	66	97	45	23	22	20
21	31	41	60	93	41	23	22	21
22	22	35	56	93	39	23	22	22
23	36	27	60	93	38	23	22	23
24	30	37	62	89	38	23	22	24
25	22	41	65	92	36	23	22	25
26	53	31	65	122	36	23	25	26
27	30	26	72	109	35	23	24	27
28	23	27	96	128	34	23	23	28
29	18	28	167	104	33	22	24	29
30	18	31	181	87	32	22	24	30
31	17		163		34	22		31
Mean	22.2	24.2	72.7	108	46.6	25.4	22.5	Mean
Runoff In Acre-Feet	1365	1440	4469	6482	2866	1563	1341	Runoff In Acre-Feet

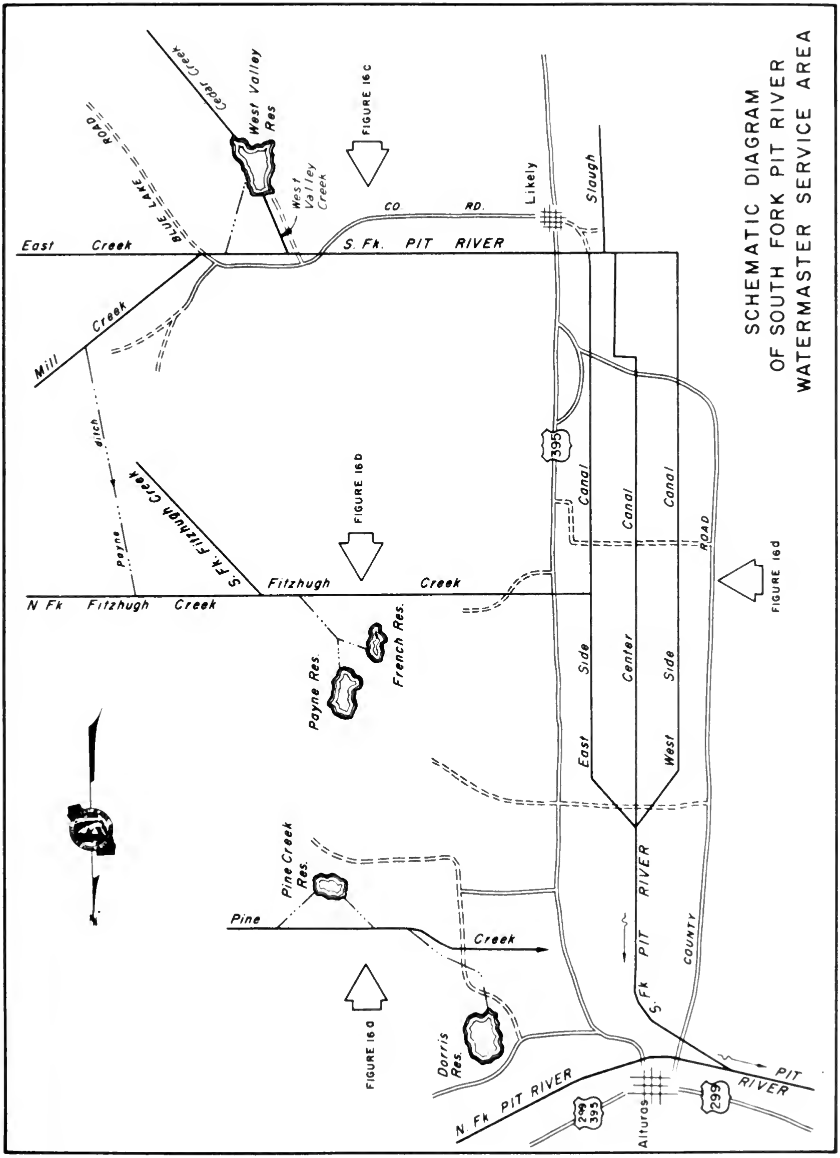
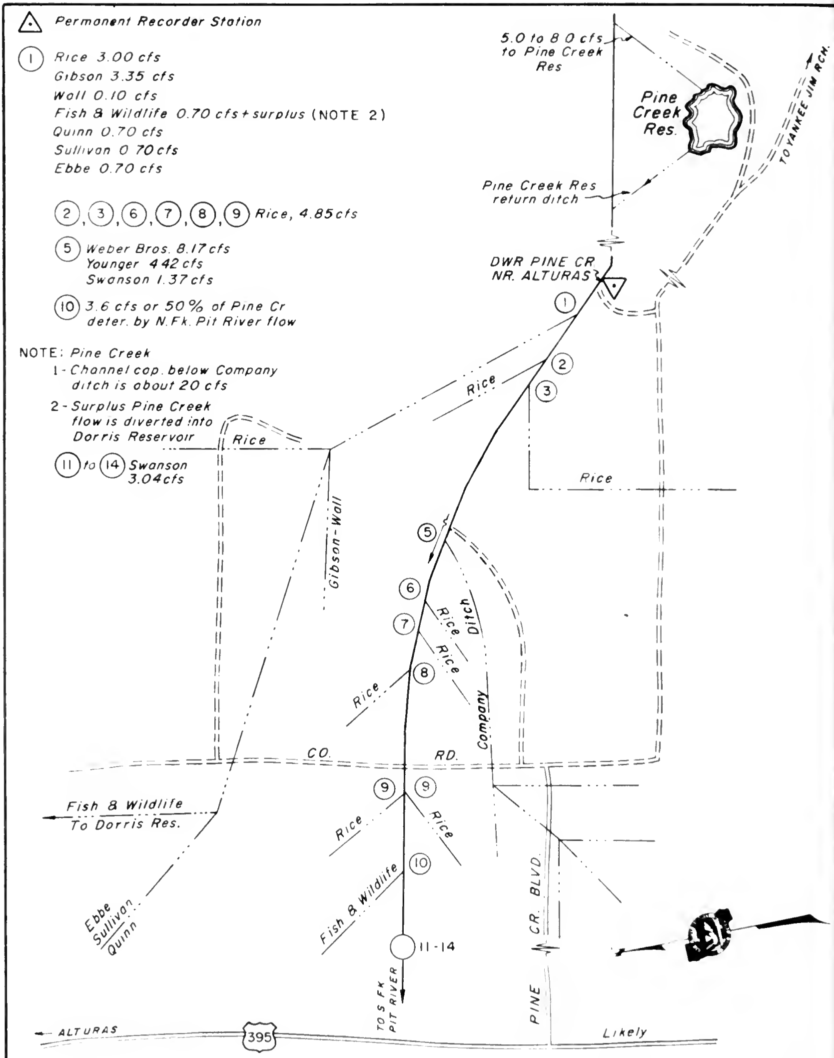
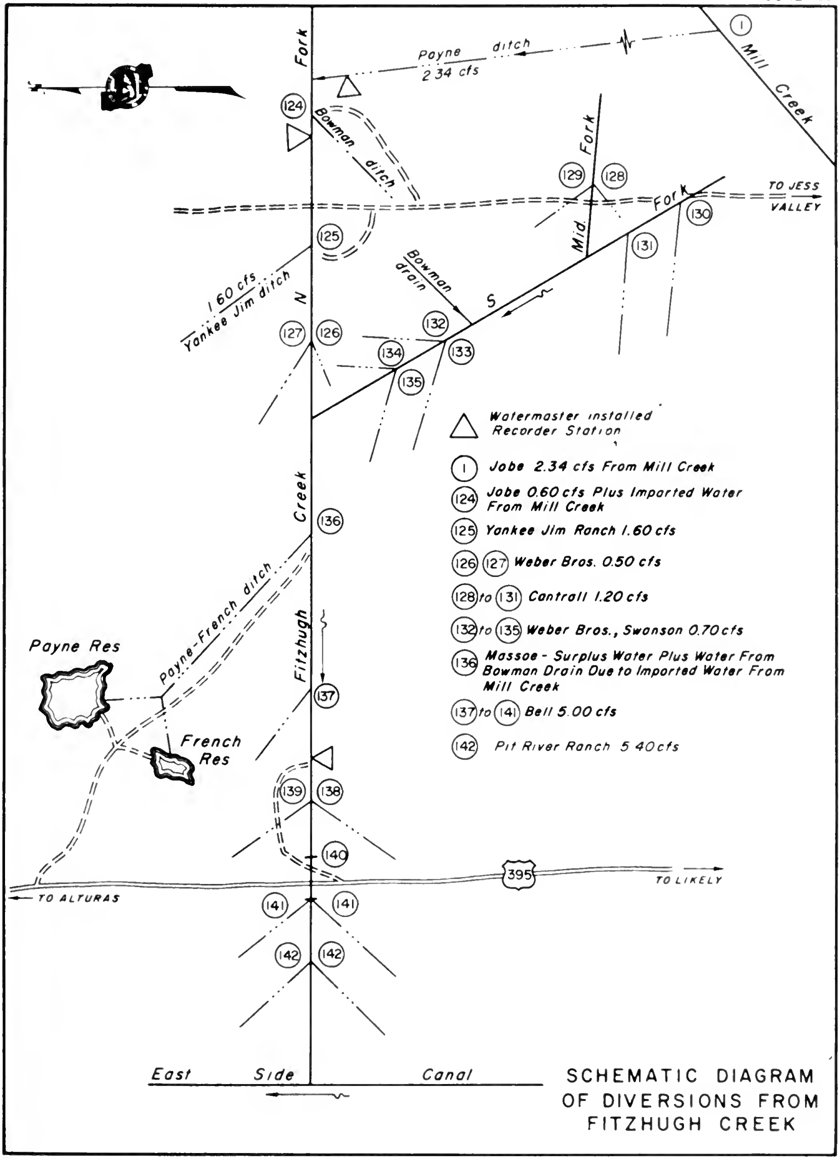

SCHEMATIC DIAGRAM
OF SOUTH FORK PIT RIVER
WATERMASTER SERVICE AREA
FIGURE 16 C
FIGURE 16 D
FIGURE 16 d
FIGURE 16 a
West Valley Res
Cedar Creek
West Valley Creek
BLUE LAKE ROAD
East Creek
S. Fk. PIT RIVER
CO RD.
Likely
Slaugh
Mill Creek
ditch
Payne
S. Fk. Fitzhugh Creek
Fitzhugh Creek
N Fk Fitzhugh Creek
French Res.
Payne Res.
East Side Canal
Center Canal
West Side Canal
COUNTY ROAD
395
Pine Creek Res.
Pine Creek
Dorris Res.
S. Fk PIT RIVER
N. Fk PIT RIVER
PIT RIVER
Alturas
299
395
299

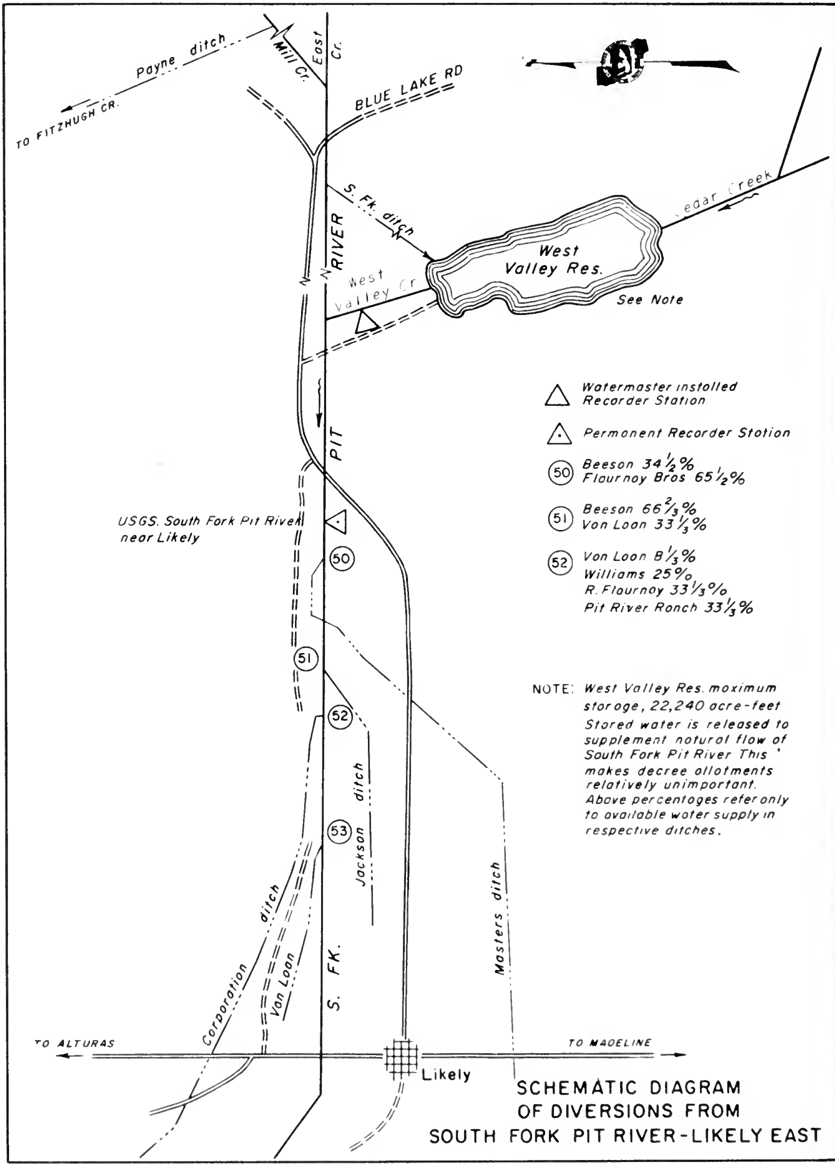
FIGURE 16a



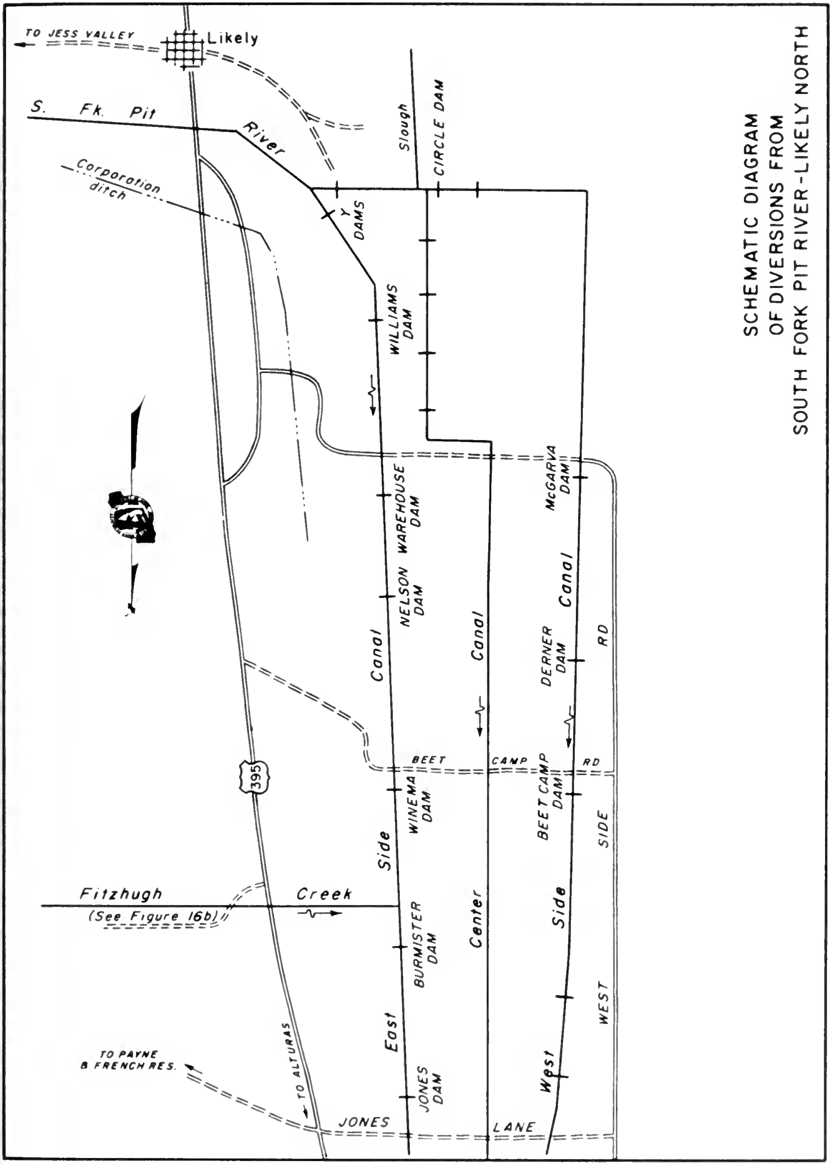
SCHEMATIC DIAGRAM OF DIVERSIONS FROM PINE CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM FITZHUGH CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM SOUTH FORK PIT RIVER-LIKELY EAST



SCHEMATIC DIAGRAM OF DIVERSIONS FROM SOUTH FORK PIT RIVER-LIKELY NORTH

Surprise Valley Watermaster Service Area

The Surprise Valley service area is located in the extreme eastern part of Modoc County. There are 172 water right owners in the service area with total allotments of 313.75 cubic feet per second. The source of water supply is comprised of 10 individual stream systems rising on the eastern slope of the Warner Mountains. These streams are fed by snowmelt runoff and traverse a fast, precipitous course down the eastern slope of the Warner Mountains to the valley floor where numerous, scattered diversion ditches convey water to the irrigated lands. The place of use is situated in a long, narrow area extending in a north-south direction between the foot of the Warner Mountains and the Alkali Lakes which lie in the center of Surprise Valley.

Surprise Valley extends from near the Oregon border on the north to Lassen County on the south, a distance of approximately 50 miles. The valley varies in width from about 8 to 10 miles. It is bordered on the north, south, and west by the rugged Warner Range and on the east by the typical mountainous desert terrain of Nevada. The valley floor is at an elevation of approximately 4,700 feet.

A schematic drawing of each major stream system with the Surprise Valley service area is presented as Figures 17 through 17j, pages 141 through 152.

Water Supply

The water supply is derived almost entirely from snowmelt runoff, with only minor spring-fed flows occurring in the latter part of the season. There are no known economically justified storage sites on the service area creeks. Because of the lack of regulatory storage, the available water supply at any specific diversion point may vary considerably within a few hours. An extreme differential in day and night temperatures causes extensive variation in snowmelt runoff quantities. This problem is further aggravated by the relatively short and steep drainage area. In addition, occasional summer thundershowers may cause a creek to discharge a flow of mammoth portions for several hours. These flashes are apt to cause considerable damage in washouts and debris deposition and are of such short duration that no beneficial use can be made of the water.

Records of the daily mean discharge at several stream gaging stations within the service area are presented in Tables 42 through 52, pages 134 through 139.

Method of Distribution

The continuous flow method of distribution is employed on most creeks; however, in a few instances the available water supply is rotated among the users in accordance with either decree schedules or by mutual agreements.

Alfalfa and meadow hay, the major crops grown in the valley, are irrigated in most instances by wild flooding, although some lands are dependent upon subsurface irrigation. Also, recent development of deep wells has placed many acres under sprinkler irrigation. Only surface water supplies are under state watermaster service.

To facilitate distribution of irrigation waters, construction of permanent diversion dams, headgates, and measuring devices has been stressed during recent years. Although these structures do not solve the problems of discharge variation and debris deposition, they do provide significant assistance in solving water measurement and distribution problems.

The several decrees (see Table 1) which apply to the Surprise Valley service area establish the following number of priority classes for the various stream systems: Bidwell Creek - four until July 10, five thereafter; Mill Creek - four; Soldier Creek - rotation March 19 to June 19 (upper users eight, lower users seven), twelve priorities in effect during the remainder of the year; Pine Creek - a rotation schedule based on accumulative flow in acre-feet; Cedar Creek - four; Deep Creek - five; Owl Creek - twenty-one; Rader Creek - six; Eagle Creek - four; and Emerson Creek - four.

1971 Distribution

The watermaster in the Surprise Valley service area from March 19 to September 30 was Alden B. Moore, Water Resources Technician II.

The very late spring brought about an unusual season. The peak runoffs occurred in June and July instead of April and May. Most crops had an above-normal yield, but grain did not recover from the cold spring.

Bidwell Creek. Total stream runoff available to users during the period April 1 through September 30 was 25,030 acre-feet or approximately 217 percent of normal.

All priorities were filled for the first schedule April 1 through June 9 (four priorities). All priorities (five) on the next schedule were filled until the middle of August. The flow decreased to first priority allotments about September 15.

Mill Creek. Total stream runoff available to users during the period April 1 through September 30 was 6,469 acre-feet, or approximately 125 percent of normal. From April through June 11 all third priority allotments were filled. Some fourth priority rights were filled for May and June. All second priority rights were supplied through the first week of August. All first and some second priority rights were met through September 30.

Soldier Creek. Total stream runoff available to users from March 19 through September 30 was 4,620 acre-feet, or approximately 125 percent of normal. Due to the wet spring and the considerable amount of alfalfa planted on low ground, lower users did not take rotation this year. Upper users had all of flow through June 18. Permit rights were filled through July.

Pine Creek. Total stream runoff available to users during the period of March 20 through September 30 was 2,828 acre-feet, or approximately 214 percent of normal. A rotation schedule (on an accumulated-flow basis) was started on March 20 and continued through April 15. On April 16, due to high flows and wet fields, the decision was made to split the streamflow 50-50 between the north and south ditch. This schedule continued until August 5, when Bordwell turned all water into Cressler Ditch. Flow stopped on August 27 and the creek remained dry through September 30.

Cedar Creek. Total runoff available to users from April 1 through September 30 was 5,987 acre-feet, or approximately 227 percent of normal. Lower users were unable to get water until mid-May because of a washout at the diversion structure. Usable amounts were then received until mid-June. Diversions No. 1 and 3 divided the flow from then to July 10 when only first priority rights were supplied.

Deep Creek. Total stream runoff available to users from April 1 through September 30 was 5,223 acre-feet, or approximately 143 percent of normal. North Deep Creek filled the one and only priority through June 19 and supplied partial rights the rest of the season. South Deep Creek supplied all five priorities from May 3 through June 7. By June 20 it was down to first priority only. Except following a few rain storms, the creek receded for the rest of the season.

Owl Creek. Total stream runoff available to users from April 1 through September 30 was about 15,200 acre-feet, or approximately 246 percent of normal. Due to flood waters from a storm on June 26 which took out the recorder, the July flow is an estimate only. All 21 priorities were filled from May 9 until about the middle of July. The flow decreased steadily thereafter, supplying only four priorities by September 30.

Radar Creek. Total stream runoff available to users from April 1 through September 30 was approximately 6,100 acre-feet, or approximately 169 percent of normal. Records for June through September were lost due to the June flood. Water distribution was interrupted from June 26 to August 3 because of washed out structures. The Cockrell Ranch did not need its 1/7 flow until late in July and were cut off on August 19. First and second priorities lasted all season.

Eagle Creek. Total stream runoff available to users from April 1 through September 30 was estimated at 11,600 acre-feet, or approximately 225 percent of normal. Control structures were washed out June 26 and remained out for the rest of the season. All priorities were filled from May 10 until late in July. Flow declined steadily with all first priorities being filled until the end of the season.

Emerson Creek. Total stream runoff available to users from April 1 through September 30 was 6,297 acre-feet or approximately 179 percent of normal. All four priorities were filled from May 8 until June 30. The flow declined from July 1 until end of season, with partial second priorities being filled at this time.

SURPRISE VALLEY WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 42

BIDWELL CREEK NEAR FORT BIDWELL

Day	March	April	May	June	July	August	September	Day
1	15	45	74	136	70	14	7.5	1
2	12	43	82	122	66	13	7.4	2
3	18	44	108	116	61	13	7.4	3
4	14	46	146	116	56	12	7.5	4
5	13	51	153	114	52	12	7.3	5
6	14	57	139	118	49	12	7.6	6
7	13	57	141	128	46	11	7.8	7
8	13	53	164	141	44	11	7.2	8
9	13	55	194	142	41	11	6.9	9
10	13	57	199	164	37	10	6.7	10
11	13	52	202	153	34	10	6.7	11
12	15	49	211	139	30	9.8	6.5	12
13	14	49	213	135	28	9.6	6.4	13
14	13	54	201	132	26	9.4	6.4	14
15	12	60	193	132	25	9.1	6.4	15
16	12	64	176	133	24	8.9	6.3	16
17	13	64	163	130	23	8.9	6.4	17
18	15	57	157	126	22	8.8	6.5	18
19	14	55	152	123	22	8.6	6.4	19
20	13	54	145	120	21	8.4	6.4	20
21	17	51	140	119	20	8.3	6.5	21
22	29	46	135	117	19	8.4	6.4	22
23	90	43	138	115	18	8.3	6.3	23
24	84	40	154	111	17	8.0	6.0	24
25	67	38	168	117	16	7.8	6.2	25
26	75	41	173	130	16	7.6	8.2	26
27	63	47	175	111	15	7.6	8.2	27
28	53	54	175	95	15	7.4	8.0	28
29	52	63	189	85	14	7.4	9.6	29
30	56	70	183	75	14	7.3	8.9	30
31	50		152		14	7.7		31
Mean	29.3	52.0	161	123	30.8	9.6	7.1	Mean
Runoff In Acre-Feet	1801	3092	9907	7329	1894	588	420	Runoff In Acre-Feet

TABLE 43

MILL CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		26*	27	35	20	4.5	2.3	1
2		26	29	33	20	3.9	2.3	2
3		26	33	35	20	3.7	2.3	3
4		24	48	35	21	3.5	2.3	4
5		23	49	33	19	3.5	2.2	5
6		24	43	33	18	3.5	2.2	6
7		25	38	33	17	3.5	2.2	7
8		23	42	34	15	3.4	2.3	8
9		23	45	34	14	3.4	2.2	9
10		26	46	35	14	3.4	2.2	10
11		26	45	34	13	3.4	2.2	11
12		22	44	33	12	3.4	2.2	12
13		21	44	32	12	3.4	2.1	13
14		23	41	31	11	3.3	2.1	14
15		25	39	31	11	3.3	2.1	15
16		26	38	30	11	3.3	2.1	16
17		28	34	29	10	3.3	2.1	17
18		28	32	29	11	3.2	2.2	18
19		26	32	28	11	3.1	2.1	19
20		24	31	27	5.3	3.0	2.1	20
21		23	29	27	5.1	2.9	2.1	21
22		21	28	26	5.9	2.8	2.1	22
23		21	28	26	5.3	2.7	2.0	23
24		20	29	25	4.9	2.6	2.0	24
25		19	31	26	4.7	2.6	2.0	25
26		19	31	33	4.5	2.6	2.1	26
27		20	31	32	4.5	2.5	2.1	27
28		21	33	30	4.3	2.5	2.1	28
29		24	36	27	4.1	2.4	2.1	29
30		26	38	26	4.1	2.4	2.1	30
31			37		4.5	2.4		31
Mean		23.6	36.5	30.7	11.0	3.1	2.2	Mean
Runoff In Acre-Feet		1410	2240	1830	668	193	128	Runoff In Acre-Feet

* Beginning of Record

SURPRISE VALLEY WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 44

SOLDIER CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		12	21	20	10	4.4	2.6	1
2		13	26	23	9.9	4.2	2.6	2
3		12	52	31	9.2	4.1	2.5	3
4		12	70	26	8.6	3.9	2.4	4
5		12	50	22	7.9	3.8	2.4	5
6		12	30	22	7.4	3.8	2.5	6
7		12	32	22	8.3	3.8	2.5	7
8		12	43	22	7.1	3.8	2.4	8
9		13	48	20	6.9	3.6	2.3	9
10		13	43	21	6.9	3.6	2.3	10
11		11	45	19	6.5	3.5	2.3	11
12		11	50	18	6.3	3.5	2.3	12
13		11	45	17	6.2	3.5	2.3	13
14		14	31	16	6.0	3.2	2.2	14
15		15	30	16	5.6	2.9	2.2	15
16		14	23	15	5.5	2.8	2.2	16
17		13	19	15	5.3	2.7	2.2	17
18		12	19	14	5.5	2.5	2.3	18
19	3.0*	12	19	13	5.3	2.4	2.3	19
20	3.5	12	17	13	5.3	2.0	2.3	20
21	5.0	11	13	13	5.2	2.3	2.5	21
22	11	11	15	12	5.0	2.0	2.6	22
23	13	11	17	12	4.8	2.0	2.5	23
24	14	10	20	11	4.7	2.2	2.5	24
25	15	9.8	20	14	4.7	2.1	2.4	25
26	13	10	19	31	4.5	2.0	2.4	26
27	12	12	21	17	4.5	2.7	2.4	27
28	11	15	22	15	4.4	2.7	2.3	28
29	11	20	24	14	4.4	2.8	2.3	29
30	11	20	22	13	4.1	2.7	2.4	30
31	12		19		4.5	2.7		31
Mean	10.3	12.6	29.8	17.9	6.1	3.0	2.4	Mean
Runoff In Acre-Feet	266	750	1840	1060	377	186	141	Runoff In Acre-Feet

* Beginning of Record

TABLE 45

PINE CREEK AT DIVISION OF NORTH AND SOUTH CHANNELS

Day	March	April	May	June	July	August	September	Day
1		12	22	22	3.4	0.5		1
2		12	24	30	2.5	0.5		2
3		13	34	35	2.2	0.5		3
4		15	40	23	1.8	0.5		4
5		16	29	19	1.5	0.5		5
6		16	22	13	1.5	0.5		6
7		16	22	11	3.4	0.5		7
8		14	25	10	5.6	0.5		8
9		17	25	8.8	3.4	0.5		9
10		17	21	8.4	2.7	0.5		10
11		13	20	7.2	2.6	0.4		11
12		12	19	6.7	2.5	0.4		12
13		12	18	6.1	1.8	0.4		13
14		13	14	5.6	1.0	0.4		14
15		16	13	5.0	1.0	0.4		15
16		20	10	4.8	1.0	0.4		16
17		18	8.8	4.5	1.0	0.3		17
18		15	8.1	4.5	0.9	0.3		18
19		14	7.8	4.3	0.9	0.3		19
20	4.4*	13	7.0	4.1	0.9	0.3		20
21	4.2	11	6.4	3.8	0.8	0.2		21
22	7.0	11	6.1	3.2	0.8	0.2		22
23	10	10	6.1	2.0	0.8	0.2		23
24	15	9.1	6.1	1.8	0.7	0.2		24
25	14	9.4	5.8	2.5	0.7	0.1		25
26	14	14	6.7	13	0.7	0.1		26
27	14	17	7.2	7.0	0.6	0.1		27
28	14	21	8.8	6.4	0.6	0.0**		28
29	15	25	18	4.5	0.6			29
30	15	24	20	4.1	0.5			30
31	14		19		0.5			31
Mean	11.7	14.8	16.1	9.4	1.6	0.4		Mean
Runoff In Acre-Feet	279	884	991	558	97	19		Runoff In Acre-Feet

* Beginning of Record
** End of Flow

SURPRISE VALLEY WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 46

CEDAR CREEK NEAR CEDARVILLE

Day	March	April	May	June	July	August	September	Day
1	5.2	26	32	32	8.0	2.8	0.9	1
2	4.9	26	33	34	7.4	2.4	0.9	2
3	4.0	25	42	37	7.0	2.3	0.8	3
4	5.0	25	51	33	6.4	2.1	0.8	4
5	4.8	27	46	29	6.0	2.0	0.7	5
6	4.6	28	41	27	5.8	2.0	0.7	6
7	4.6	26	40	25	5.9	1.9	1.0	7
8	4.7	26	41	24	6.8	1.8	0.8	8
9	4.7	27	41	23	5.8	1.7	0.6	9
10	4.7	27	38	23	5.4	1.7	0.6	10
11	5.0	25	37	20	4.7	1.6	0.6	11
12	5.7	24	37	19	4.3	1.6	0.6	12
13	6.0	24	36	17	4.2	1.5	0.5	13
14	5.9	27	32	16	4.1	1.4	0.5	14
15	6.2	28	30	15	3.9	1.3	0.5	15
16	6.4	27	28	14	3.9	1.3	0.5	16
17	6.4	27	26	15	3.8	1.2	0.5	17
18	6.4	26	24	14	3.8	1.2	0.5	18
19	6.8	27	24	13	3.9	1.1	0.5	19
20	8.5	26	24	12	4.1	1.0	0.5	20
21	11	25	22	11	3.6	1.1	0.5	21
22	18	24	21	10	3.4	1.1	0.5	22
23	60	24	21	9.5	3.3	1.0	0.5	23
24	47	22	21	8.8	3.3	0.9	0.5	24
25	41	22	21	10	3.1	0.9	0.5	25
26	51	24	22	21	2.9	0.8	1.2	26
27	41	25	21	14	2.8	0.8	1.2	27
28	37	27	21	13	2.6	0.8	1.0	28
29	36	31	27	11	2.5	0.8	2.5	29
30	35	32	28	9.3	2.5	0.7	2.9	30
31	29		29		2.9	0.8		31
Mean	16.7	26.0	30.9	18.7	4.5	1.4	0.8	Mean
Runoff In Acre-Feet	1024	1547	1898	1110	274	86	48	Runoff In Acre-Feet

TABLE 47

NORTH DEEP CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		1.2*	7.3	21	5.0	2.8	0.7	1
2		3.6	8.5	18	4.7	2.8	0.7	2
3		4.8	15	18	4.5	2.8	0.7	3
4		4.8	16	16	4.4	2.8	0.7	4
5		7.3	16	15	4.3	2.4	0.8	5
6		8.6	14	14	4.1	2.4	0.7	6
7		7.3	11	14	4.2	2.4	0.7	7
8		6.1	16	12	4.1	2.2	0.6	8
9		6.1	17	14	3.9	2.2	0.6	9
10		7.3	18	16	3.8	2.2	0.6	10
11		6.1	18	14	3.7	2.2	0.7	11
12		3.6	20	12	3.6	2.0	0.7	12
13		2.4	21	11	3.5	2.0	0.7	13
14		4.8	20	9.8	3.4	2.0	0.7	14
15		6.1	17	8.5	3.4	2.0	0.7	15
16		6.1	15	7.0	3.3	2.0	0.8	16
17		6.1	12	7.0	3.3	2.0	0.8	17
18		7.3	8.5	6.7	3.2	1.8	0.8	18
19		11	8.5	6.3	3.1	1.8	0.8	19
20		11	6.0	5.7	3.0	1.6	0.8	20
21		9.9	2.3	5.4	2.9	1.6	0.8	21
22		9.9	3.6	5.1	2.9	1.6	0.8	22
23		7.3	3.6	4.4	2.9	1.6	0.9	23
24		6.1	8.5	4.4	2.9	1.4	0.9	24
25		3.6	12	4.7	3.0	1.4	0.9	25
26		1.2	12	9.8	3.0	1.3	0.9	26
27		2.4	14	6.0	2.8	1.0	0.9	27
28		4.8	15	6.0	2.8	0.8	0.9	28
29		9.9	18	5.4	2.9	0.7	0.9	29
30		12	21	5.1	2.9	0.6	0.9	30
31			23		2.9	0.6		31
Mean		6.3	13.5	10.1	3.5	1.8	0.7	Mean
Runoff In Acre-Feet		375	829	599	214	113	46	Runoff In Acre-Feet

* Beginning of Record

SURPRISE VALLEY WATERMASTER SERVICE AREA

1971 Daily Mean Discharge In Cubic Feet Per Second

TABLE 48

SOUTH DEEP CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		6.0*	16	30	4.9	2.0	0.8	1
2		7.9	17	29	4.8	1.7	0.8	2
3		7.2	24	28	4.5	1.7	0.8	3
4		6.0	31	28	4.3	1.7	0.8	4
5		6.5	32	25	4.0	1.5	0.8	5
6		6.5	28	22	4.0	1.6	0.9	6
7		5.5	26	21	4.0	1.5	1.1	7
8		5.5	27	20	3.9	1.5	0.8	8
9		6.5	28	20	3.7	1.4	0.7	9
10		7.2	26	19	3.4	1.2	0.7	10
11		4.5	27	19	3.3	1.2	0.6	11
12		6.5	27	18	3.2	1.2	0.6	12
13		6.0	28	17	3.1	1.2	0.6	13
14		9.4	32	17	3.1	1.2	0.6	14
15		9.4	26	16	3.0	1.2	0.6	15
16		9.4	23	15	2.9	1.1	0.6	16
17		9.4	20	14	2.8	1.1	0.6	17
18		8.4	18	14	2.9	0.9	0.6	18
19		8.9	16	12	2.9	0.9	0.6	19
20		9.4	14	10	2.6	0.9	0.6	20
21		8.4	13	9.5	2.5	0.9	0.7	21
22		6.5	12	8.9	2.5	0.9	0.6	22
23		5.5	12	6.1	2.4	0.9	0.6	23
24		5.0	12	3.2	2.4	0.8	0.6	24
25		5.0	14	4.4	2.3	0.8	0.6	25
26		5.5	15	15	2.2	0.8	0.6	26
27		7.2	15	9.5	2.2	0.6	0.6	27
28		9.4	18	9.5	2.1	0.6	0.6	28
29		13	22	6.1	2.1	0.6	0.6	29
30		16	33	4.9	2.3	0.6	0.6	30
31			36		2.4	0.6		31
Mean		7.6	22.2	15.7	3.1	1.1	0.7	Mean
Runoff In Acre-Feet		452	1360	934	192	69	40	Runoff In Acre-Feet

* Beginning of Record

TABLE 49

OWL CREEK BELOW ALLEN-ARRECHE DITCH

Day	March	April	May	June	July	August	September	Day
1		12*	27	93		14*	3.2	1
2		12	31	92		13	3.1	2
3		12	36	94		13	3.1	3
4		11	51	91		11	3.0	4
5		12	54	109		10	2.9	5
6		12	37	120		9.9	3.3	6
7		12	36	126		9.2	3.4	7
8		11	39	120		8.4	2.8	8
9		11	45	109		7.6	2.5	9
10		11	47	106		7.1	2.2	10
11		11	48	76		6.6	2.2	11
12		11	51	76		6.1	2.2	12
13		12	50	93		5.8	2.1	13
14		16	51	68		5.5	2.1	14
15		17	63	82		5.1	2.0	15
16		17	56	98		5.0	2.0	16
17		18	40	96		4.7	1.9	17
18		17	38	61		4.5	1.9	18
19		16	38	78		4.4	1.8	19
20		16	38	91		4.3	1.8	20
21		13	35	123		4.2	1.8	21
22		11	34	124		4.2	1.8	22
23		10	38	124		4.2	1.8	23
24		9.8	46	122		4.1	1.8	24
25		12	60	120		4.1	1.7	25
26		23	82	300		4.1	1.7	26
27		21	58	250		4.1	1.8	27
28		22	82	230		4.1	1.8	28
29		25	98	180		4.1	1.9	29
30		26	98	150**		4.0	1.9	30
31			87			4.0		31
Mean		14.7	50.8	120.1		6.5	2.3	Mean
Runoff In Acre-Feet		873	3120	7150		397	135	Runoff In Acre-Feet

* Beginning of Record
** End of Record

SURPRISE VALLEY WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 50

RADER CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		3.8*	11					1
2		4.0	12					2
3		4.7	13					3
4		4.4	14					4
5		3.7	14					5
6		4.0	14					6
7		3.8	14					7
8		3.7	14					8
9		4.7	14					9
10		4.7	15					10
11		3.8	16					11
12		3.7	20					12
13		3.8	21					13
14		4.4	21					14
15		4.9	20					15
16		4.9	20					16
17		4.8	16					17
18		4.8	14					18
19		4.6	14					19
20		4.6	14					20
21		4.4	14					21
22		4.4	14					22
23		4.0	14					23
24		3.9	16					24
25		4.6	19					25
26		5.9	19					26
27		6.1	19					27
28		6.8	22					28
29		7.4	21					29
30		7.8	25					30
31			24**					31
Mean		4.7	16.7					Mean
Runoff In Acre-Feet		280	1021					Runoff In Acre-Feet

* Beginning of Record
** End of Record

TABLE 51

EAGLE CREEK AT EAGLEVILLE

Day	March	April	May	June	July	August	September	May
1		8.8*	20	20				1
2		8.8	25	20				2
3		9.5	27	20				3
4		9.5	31	22				4
5		12	27	22				5
6		14	22	22				6
7		14	20	24				7
8		12	25	26				8
9		12	27	26				9
10		9.5	31	31				10
11		8.8	33	46				11
12		8.1	35	53				12
13		8.1	35	55				13
14		9.5	33	53				14
15		16	33	62				15
16		14	31	68				16
17		12	26	46				17
18		9.5	26	25				18
19		9.5	25	31				19
20		8.1	25	33				20
21		6.8	24	38				21
22		6.8	22	35				22
23		6.8	24	40				23
24		6.1	29	42				24
25		6.1	35	42				25
26		8.8	33	200E				26
27		9.5	31	300E				27
28		12	35	300E				28
29		16	35	275E				29
30		22	33	250E**				30
31			31					31
Mean		10.5	28.7	74.2				Mean
Runoff In Acre-Feet		625	1760	4420E				Runoff In Acre-Feet

* Beginning of Record
** End of Record
E Estimated

SURPRISE VALLEY WATERMASTER SERVICE AREA

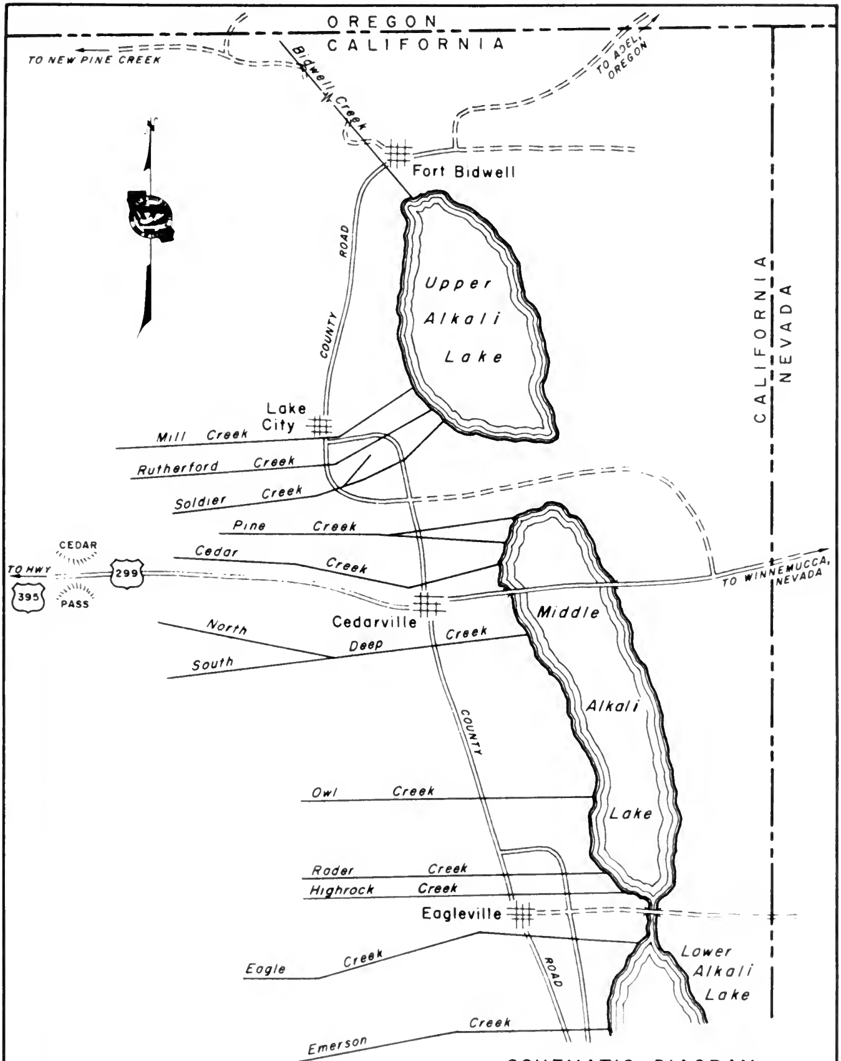
1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 52

EMERSON CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		11*	17	42	21	9.4	5.5	1
2		13	19	39	21	8.8	5.7	2
3		12	21	38	21	8.3	5.9	3
4		11	28	38	21	7.9	5.7	4
5		12	28	33	20	7.8	5.5	5
6		13	24	35	19	7.6	5.7	6
7		14	23	40	18	7.6	5.9	7
8		13	26	46	17	7.5	5.5	8
9		13	28	47	17	7.5	5.5	9
10		13	30	50	16	7.3	5.3	10
11		12	32	46	16	7.1	5.3	11
12		12	34	46	15	6.8	5.3	12
13		12	38	40	13	6.5	5.3	13
14		12	32	39	12	6.3	5.3	14
15		13	35	35	12	6.2	5.3	15
16		13	35	37	12	6.2	5.3	16
17		13	30	35	12	6.0	5.3	17
18		14	28	35	12	6.0	5.3	18
19		13	27	31	12	6.2	5.3	19
20		12	24	28	11	6.2	5.5	20
21		11	24	28	11	6.2	5.5	21
22		10	24	26	11	6.2	5.5	22
23		9.6	26	27	11	6.2	5.5	23
24		8.8	28	25	10	6.2	5.5	24
25		10	32	28	9.9	6.0	5.5	25
26		13	32	48	9.4	5.9	5.7	26
27		13	32	31	8.8	5.7	5.7	27
28		14	40	29	8.3	5.5	5.5	28
29		15	46	28	8.8	5.5	5.5	29
30		15	42	28	9.4	5.3	5.5	30
31			40		9.9	5.5		31
Mean		12.3	29.8	35.9	13.7	6.7	5.5	Mean
Runoff in Acre-Feet		734	1840	2140	845	411	327	Runoff in Acre-Feet

* Beginning of Record



SCHEMATIC DIAGRAM OF SURPRISE VALLEY WATERMASTER SERVICE AREA

△ Permanent Recorder Station

March 15 through July 9
(major season of use)

(5) G Peterson 0.38 cfs
C. Bucher 0.45 cfs
Sweeney 0.07 cfs

(6) Sweeney 0 18 cfs

(7) G Peterson 0.50 cfs

(8) McConnaughy 7.24 cfs *
Town Users 0.06 cfs

(9) Conlan 7 63 cfs
Town Users 0.22 cfs

(10) Carey 6.13 cfs
C Bucher 0 66 cfs
P Peterson 0 44 cfs
Town Users 0 30 cfs

(11) C Bucher 0 38 cfs

(12) U.S Indian Service 0.46 cfs
Green 0 14 cfs
Baty 0 12 cfs

(13) McConnaughy 5 24 cfs *
Town Users 0 44 cfs

(15) Fee 8 94 cfs
Sagehorn 1.34 cfs
O'Callaghan 2 88 cfs
Toney 0.42 cfs

(17) Kober 0 05 cfs

(20) Sagehorn 0 88 cfs

(19A) (20) (20A) Carey 1 43 cfs

(21) Sagehorn 1 39 cfs

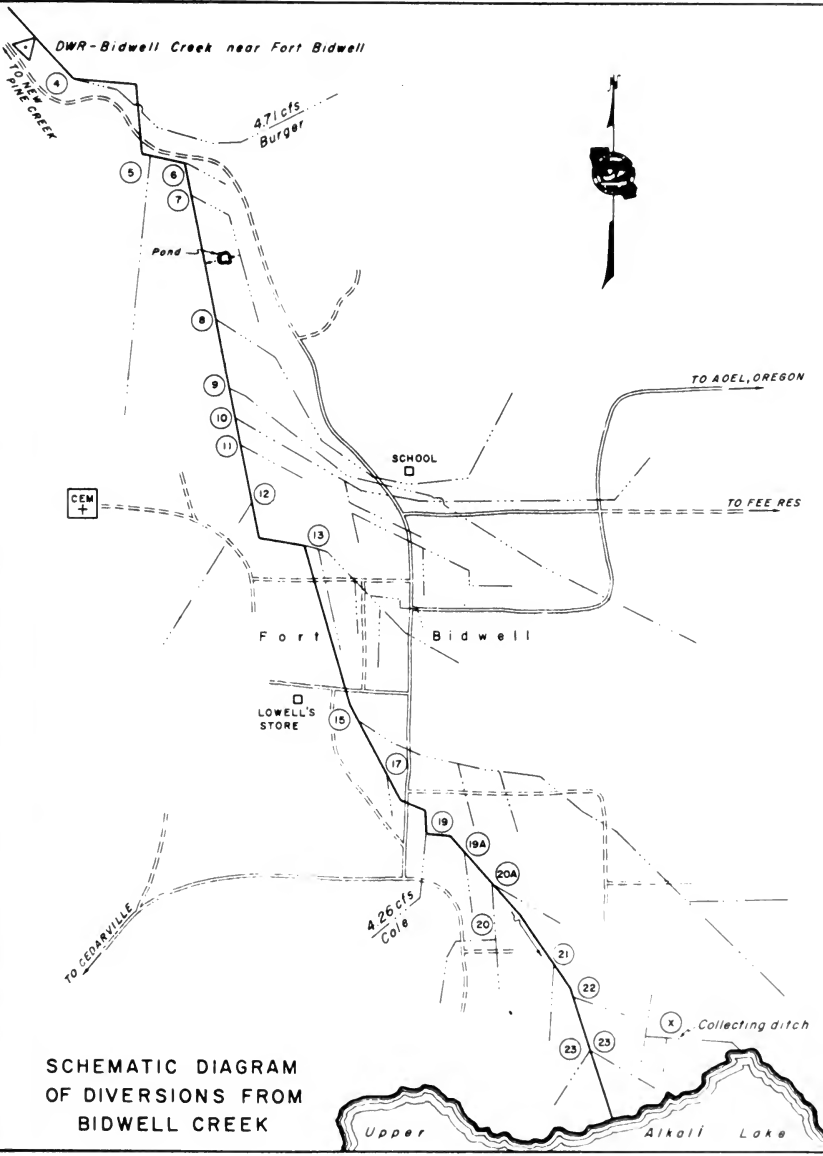
(22) O'Callaghan 0 38 cfs

(23) Sagehorn 1 79 cfs

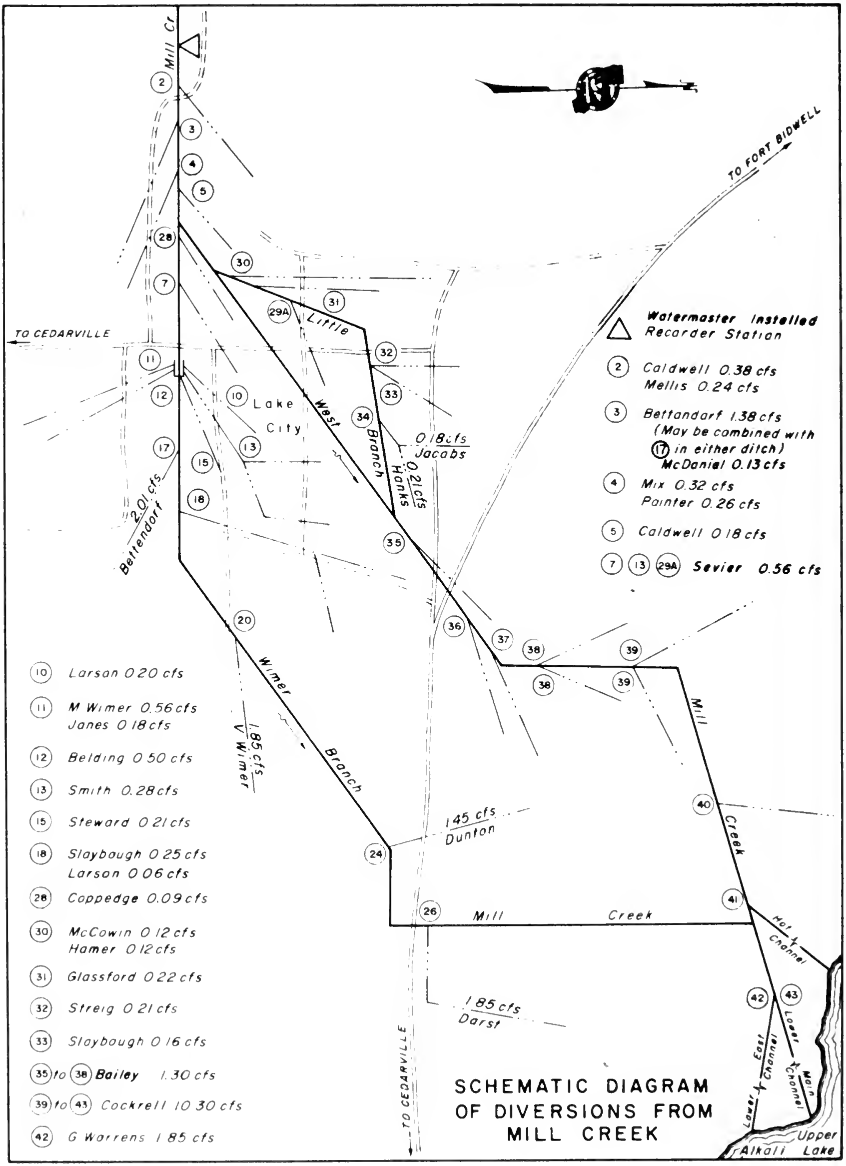
(X) Sagehorn — If flow is less than 3 82 cfs, deficiency is made up by additional diversion through (15) if Fee Ranch allotment is satisfied

* May be used in either ditch

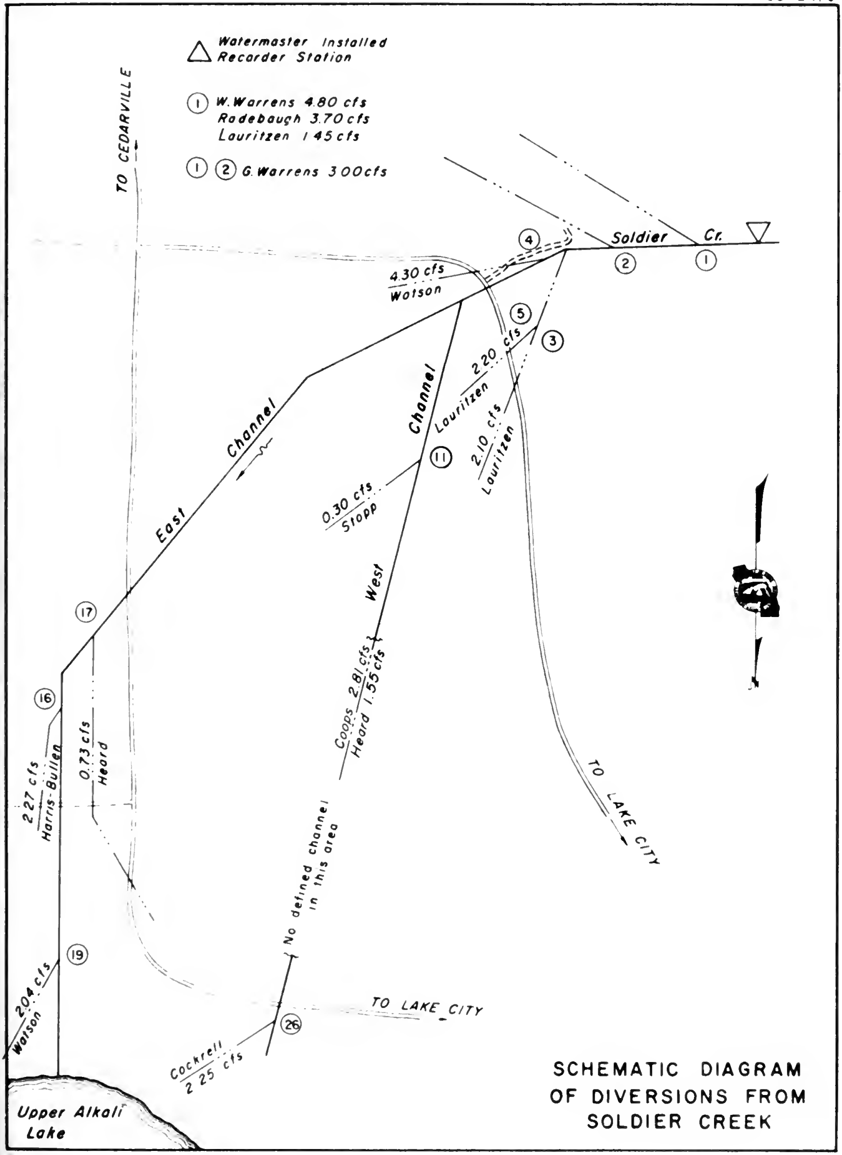
NOTE Sagehorn and O'Callaghan waters may be used in any of their ditches at discretion of user and watermaster



SCHEMATIC DIAGRAM OF DIVERSIONS FROM BIDWELL CREEK

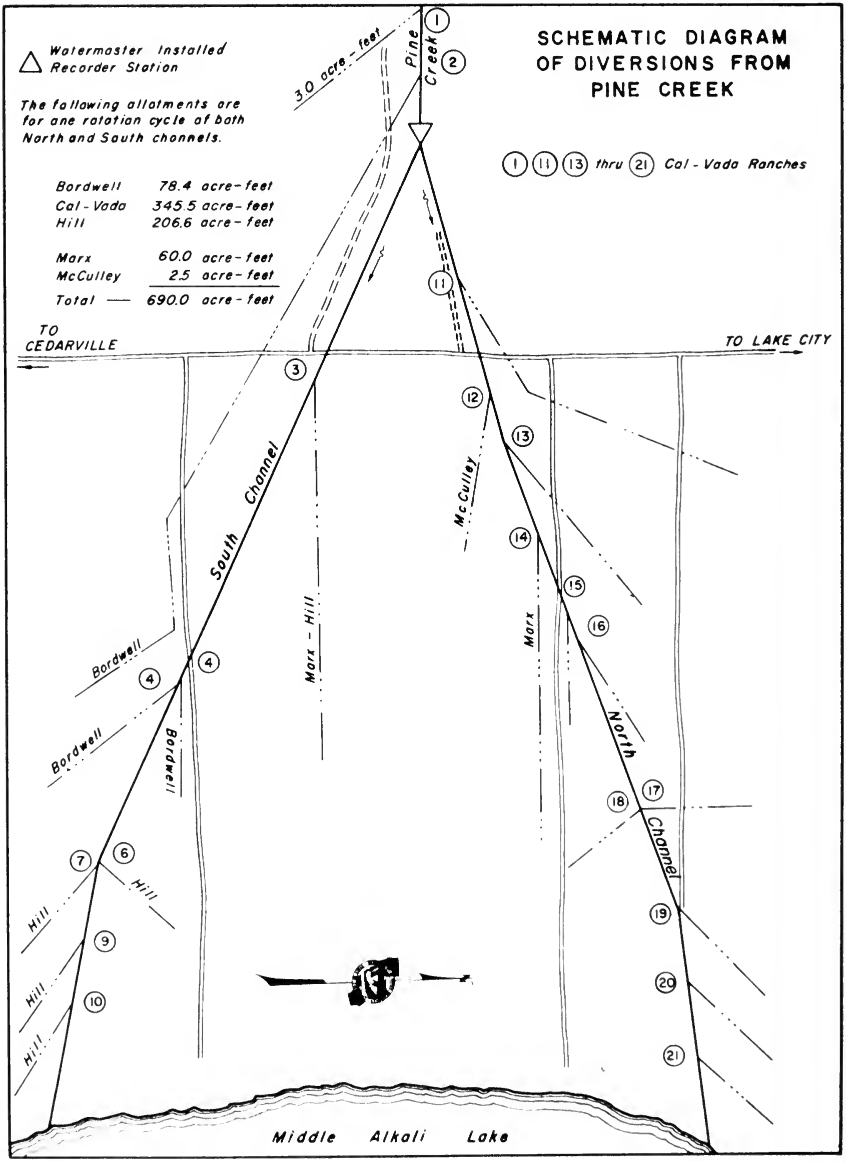


SCHEMATIC DIAGRAM OF DIVERSIONS FROM MILL CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM SOLDIER CREEK

FIGURE 17 d


SCHEMATIC DIAGRAM OF DIVERSIONS FROM PINE CREEK
Watermaster Installed Recorder Station
The following allotments are for one rotation cycle of both North and South channels.
Bordwell 78.4 acre-feet
Cal-Vada 345.5 acre-feet
Hill 206.6 acre-feet
Marx 60.0 acre-feet
McCulley 2.5 acre-feet
Total — 690.0 acre-feet
1 11 13 thru 21 Cal-Vada Ranches
3.0 acre-feet
Pine Creek
TO CEDARVILLE
TO LAKE CITY
South Channel
North Channel
Marx - Hill
McCulley
Marx
Bordwell
Bordwell
Bordwell
Hill
Hill
Hill
Hill
Middle Alkali Lake
1
2
3
4
4
6
7
9
10
11
12
13
14
15
16
17
18
19
20
21

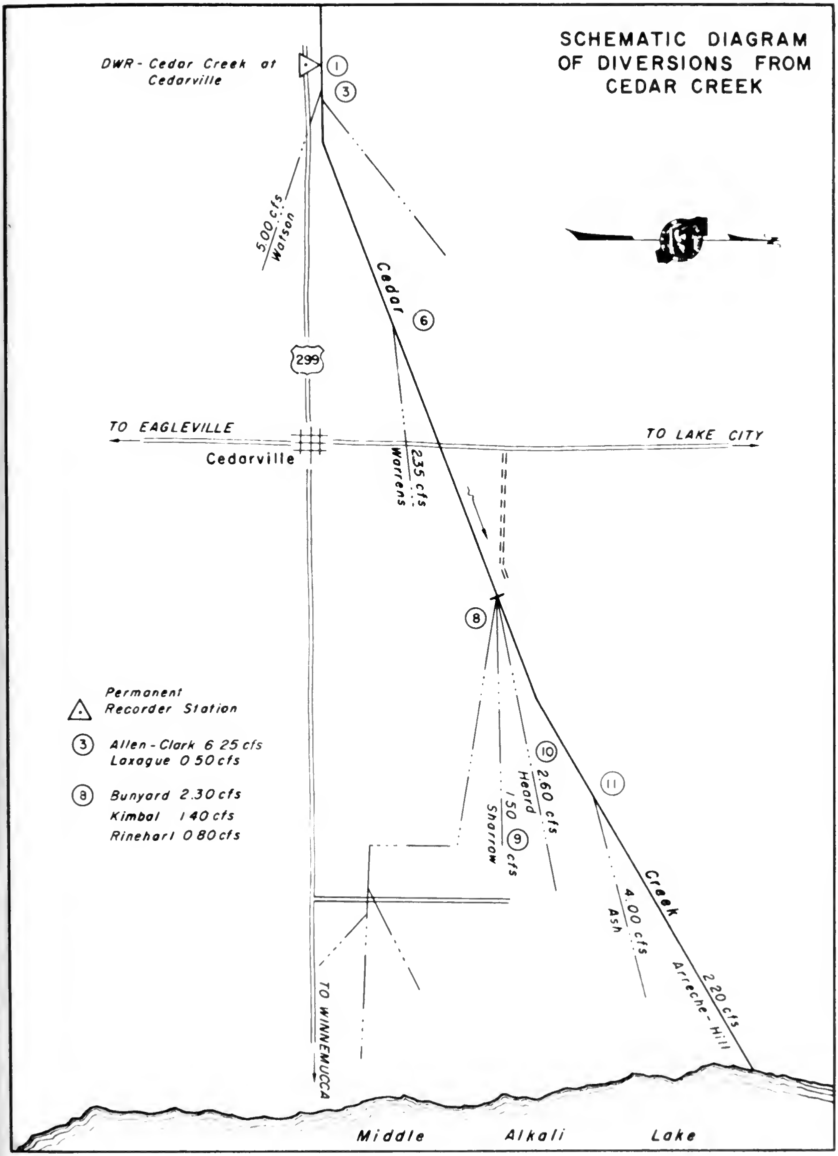
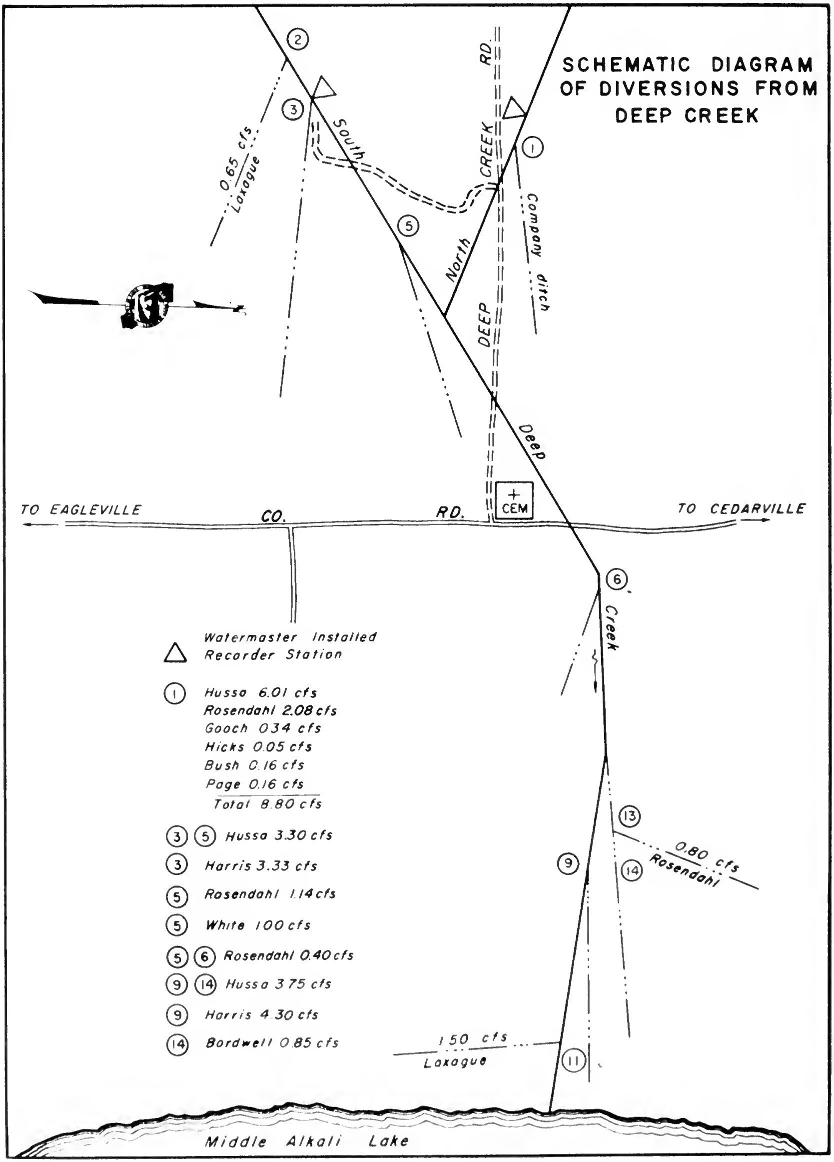
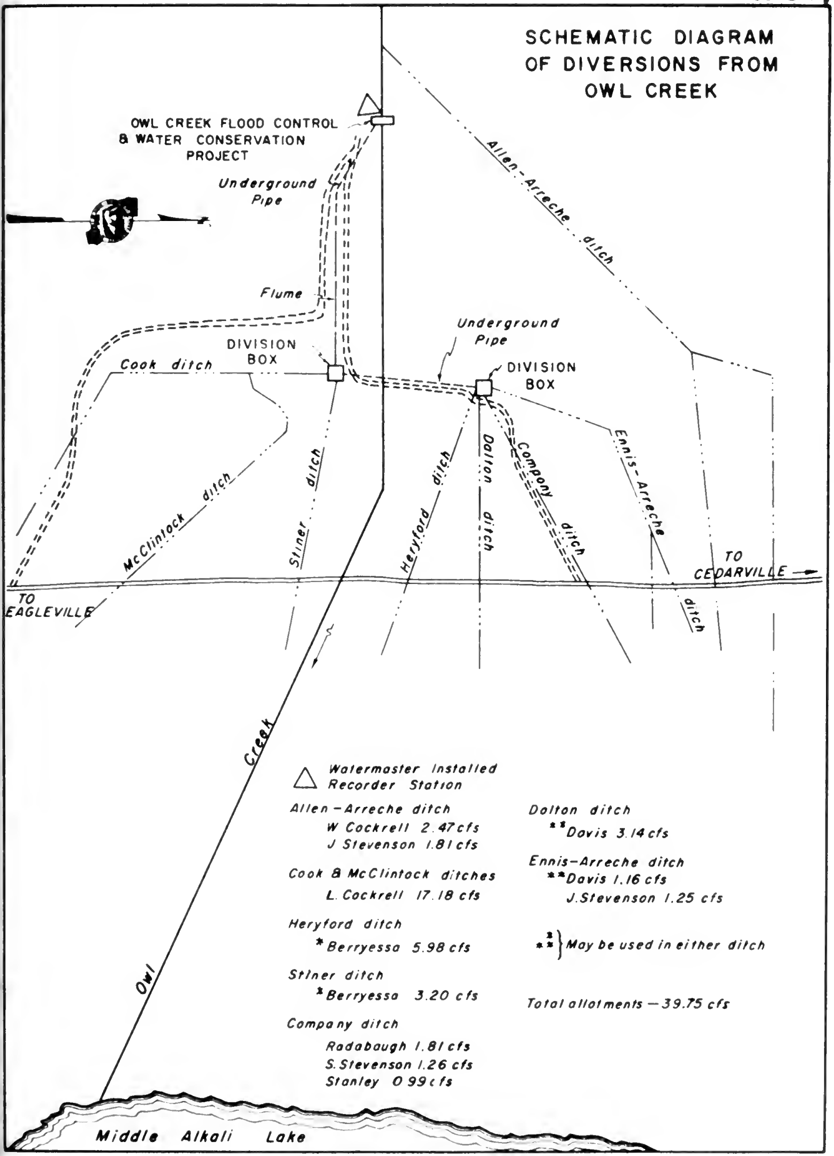

SCHEMATIC DIAGRAM OF DIVERSIONS FROM CEDAR CREEK
DWR - Cedar Creek at Cedarville
5.00 cfs Watson
Cedar
299
TO EAGLEVILLE
Cedarville
2.35 cfs Warrens
TO LAKE CITY
2.60 cfs Heard
1.50 cfs Sharrow
Creek
4.00 cfs Ash
2.20 cfs Arreche-Hill
TO WINNEMUCCA
Middle Alkali Lake
Permanent Recorder Station
(3) Allen-Clark 6.25 cfs
Laxague 0.50 cfs
(8) Bunyard 2.30 cfs
Kimbal 1.40 cfs
Rinehart 0.80 cfs

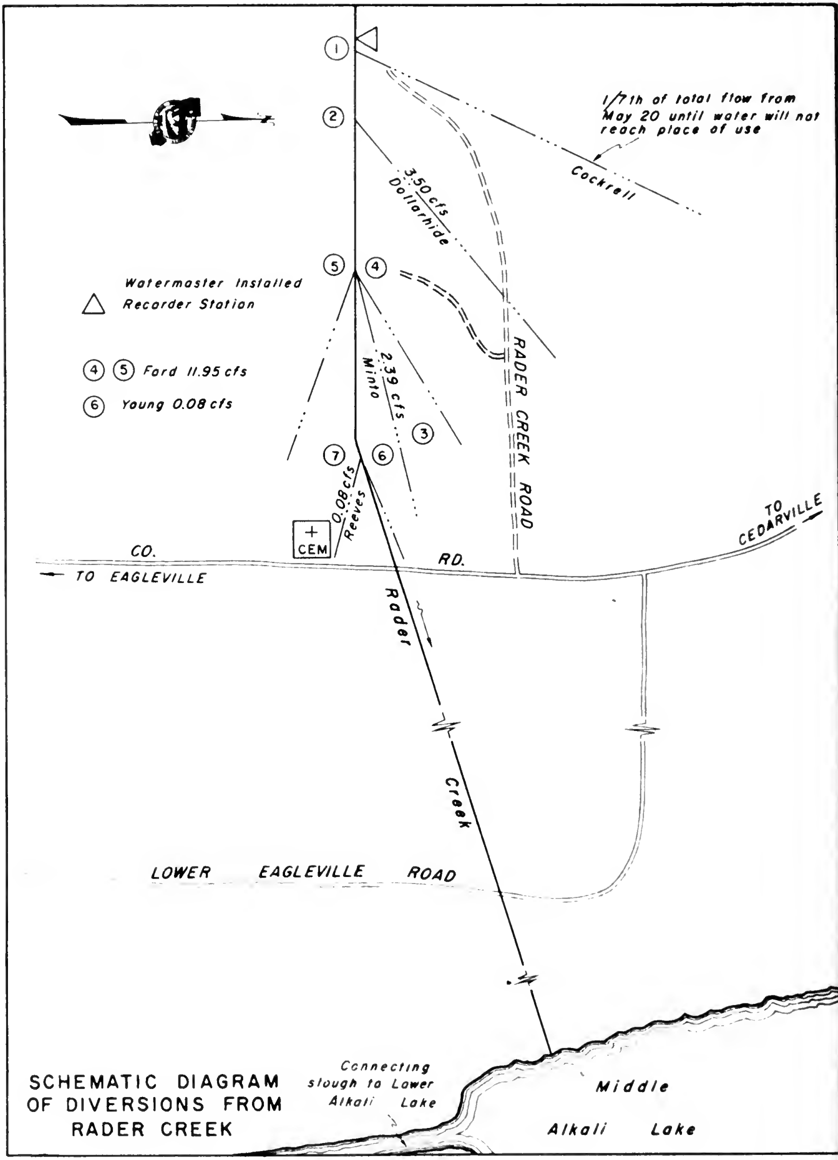
FIGURE 17 f



SCHEMATIC DIAGRAM OF DIVERSIONS FROM DEEP CREEK
0.65 cfs
Laxague
South
North
DEEP CREEK RD.
Company ditch
Deep
Creek
TO EAGLEVILLE
CO. RD.
CEM
TO CEDARVILLE
0.80 cfs
Rosendahl
1.50 cfs
Laxague
Watermaster Installed Recorder Station
1 Hussa 6.01 cfs
Rosendahl 2.08 cfs
Gooch 0.34 cfs
Hicks 0.05 cfs
Bush 0.16 cfs
Page 0.16 cfs
Total 8.80 cfs
3 5 Hussa 3.30 cfs
3 Harris 3.33 cfs
5 Rosendahl 1.14 cfs
5 White 1.00 cfs
5 6 Rosendahl 0.40 cfs
9 14 Hussa 3.75 cfs
9 Harris 4.30 cfs
14 Bordwell 0.85 cfs
Middle Alkali Lake

FIGURE 17 g


SCHEMATIC DIAGRAM OF DIVERSIONS FROM OWL CREEK
OWL CREEK FLOOD CONTROL & WATER CONSERVATION PROJECT
Underground Pipe
Allen-Arreche ditch
Flume
DIVISION BOX
Underground Pipe
DIVISION BOX
Cook ditch
McClintock ditch
Stiner ditch
Heryford ditch
Dalton ditch
Company ditch
Ennis-Arreche ditch
TO CEDARVILLE
TO EAGLEVILLE
Owl Creek
Middle Alkali Lake
Watermaster Installed Recorder Station
Allen-Arreche ditch
W Cockrell 2.47 cfs
J Stevenson 1.81 cfs
Cook & McClintock ditches
L. Cockrell 17.18 cfs
Heryford ditch
*Berryessa 5.98 cfs
Stiner ditch
*Berryessa 3.20 cfs
Company ditch
Radabaugh 1.81 cfs
S. Stevenson 1.26 cfs
Stanley 0.99 cfs
Dalton ditch
**Davis 3.14 cfs
Ennis-Arreche ditch
**Davis 1.16 cfs
J. Stevenson 1.25 cfs
* ** May be used in either ditch
Total allotments — 39.75 cfs



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
RADER CREEK

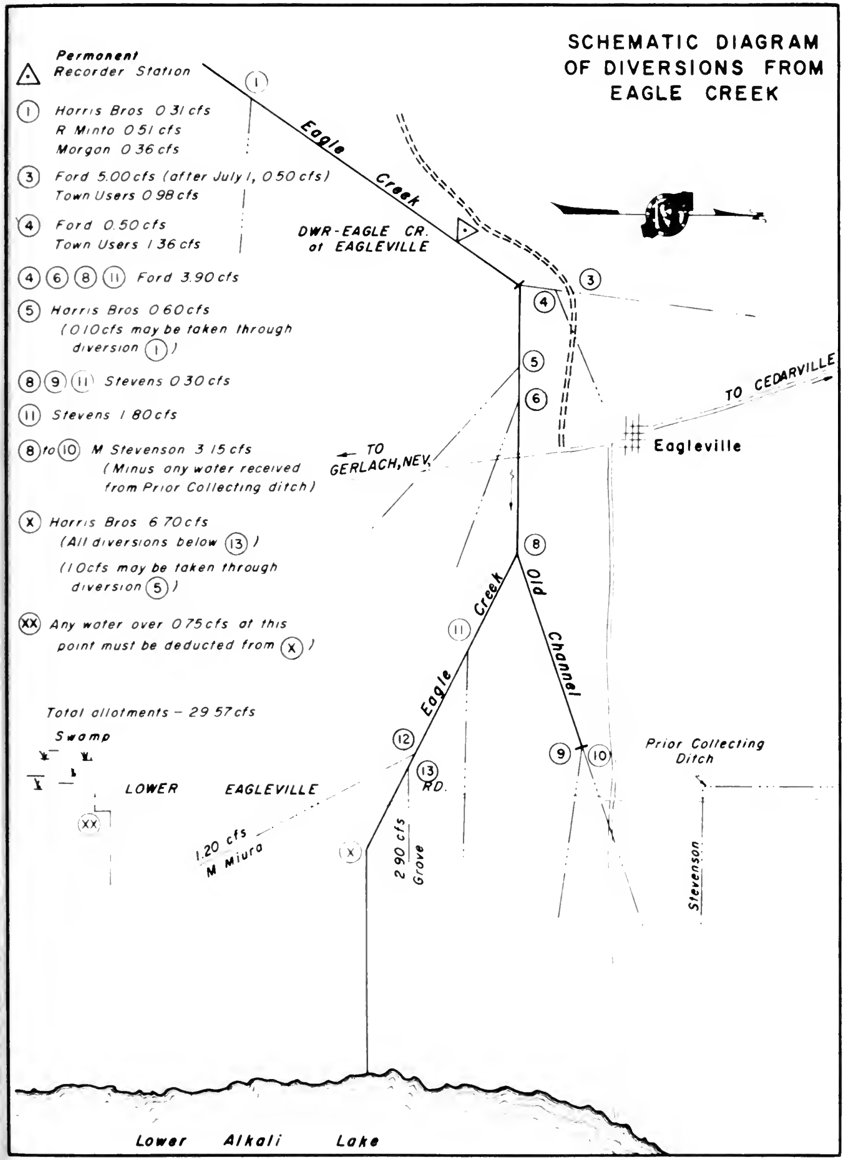
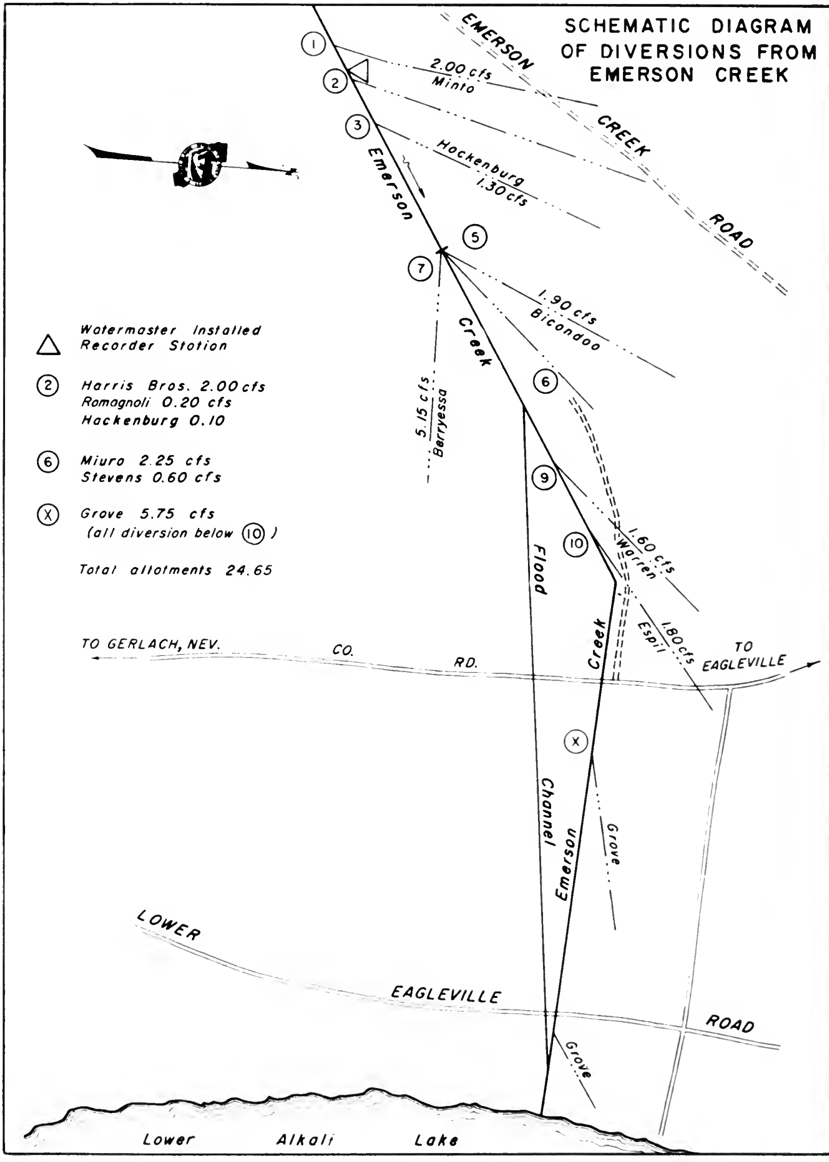

SCHEMATIC DIAGRAM OF DIVERSIONS FROM EAGLE CREEK
Permonent Recorder Station
(1) Horris Bros 0 31 cfs
R Minto 0 51 cfs
Morgon 0 36 cfs
(3) Ford 5.00 cfs (after July 1, 0 50 cfs)
Town Users 0 98 cfs
(4) Ford 0.50 cfs
Town Users 1 36 cfs
(4) (6) (8) (11) Ford 3.90 cfs
(5) Horris Bros 0 60 cfs
(0 10 cfs may be taken through diversion (1))
(8) (9) (11) Stevens 0 30 cfs
(11) Stevens 1 80 cfs
(8) to (10) M Stevenson 3 15 cfs
(Minus any water received from Prior Collecting ditch)
(X) Horris Bros 6 70 cfs
(All diversions below (13))
(1 0 cfs may be taken through diversion (5))
(XX) Any water over 0 75 cfs at this point must be deducted from (X))
Total allotments – 29 57 cfs
Swamp
LOWER EAGLEVILLE RD.
Eagle Creek
DWR-EAGLE CR. at EAGLEVILLE
TO CEDARVILLE
Eagleville
TO GERLACH, NEV.
Old Channel
Prior Collecting Ditch
1.20 cfs M Miura
2 90 cfs Grove
Stevenson
Lower Alkali Lake

FIGURE 17


SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
EMERSON CREEK
EMERSON CREEK ROAD
2.00 cfs
Minto
Hockenburg
1.30 cfs
Emerson Creek
1.90 cfs
Bicondoa
5.15 cfs
Berryessa
1.60 cfs
Warren
1.80 cfs
Espil
Flood Channel
Creek
Watermaster Installed Recorder Station
2 Harris Bros. 2.00 cfs
Romagnoli 0.20 cfs
Hackenburg 0.10
6 Miuro 2.25 cfs
Stevens 0.60 cfs
X Grove 5.75 cfs
(all diversion below 10)
Total allotments 24.65
TO GERLACH, NEV.
CO. RD.
TO EAGLEVILLE
Emerson
Grove
LOWER EAGLEVILLE ROAD
Lower Alkali Lake

Susan River Watermaster Service Area

The Susan River service area is located in the southern part of Lassen County in the vicinity of Susanville. There are 160 water right owners in the service area with total allotments of 351.732 cubic feet per second. The primary place of use is in Honey Lake Valley between Susanville and the northwest shore of Honey Lake, a distance of about 25 miles. The valley floor is at an elevation of about 4,000 feet. The source of supply is comprised of three stream systems: Susan River and tributaries, Baxter Creek and tributaries, and Parker Creek.

Susan River originates on the east slope of the Sierra Nevada immediately east of Lassen National Park at an elevation of about 7,900 feet. Its channel runs easterly from Silver Lake through McCoy Flat Reservoir, the town of Susanville, and then to Honey Lake.

Susan River has four major tributaries: Piute Creek, entering from the north at Susanville; Gold Run and Lassen Creeks, entering from the south between Susanville and Johnstonville; and Willow Creek, entering from the north above Standish. Gold Run and Lassen Creeks rise on the north slope of Diamond Mountain at an elevation of about 7,600 feet. The watersheds of Piute and Willow Creeks are on the south slopes of Round Valley Mountain at lower elevations.

A short distance below its confluence with Willow Creek the Susan River divides into three channels: Tanner Slough Channel on the north, Old Channel in the middle, and Dill Slough Channel on the south. Hartson Slough and Whitehead Slough divert from Dill Slough on its south bank farther downstream.

The Baxter Creek stream system is located in Honey Lake Valley on the east slope of the Sierra Nevada Mountains, about 10 miles southeast of Susanville. The principal creeks in the system are: Baxter Creek, which rises in the extreme western portion of the basin and flows in an easterly direction, and Elesian, Sloss, and Bankhead Creeks, which are tributaries of Baxter Creek from the south.

Parker Creek is situated in Honey Lake Valley on the east slope of the Sierra Nevada Mountains about 15 miles southeast of Susanville. It rises on the east slope of Diamond Mountain and flows in an easterly direction for about 5 miles into Honey Lake.

A schematic drawing of each major stream system within the Susan River service area is presented as Figures 18 through 18e, pages 159 through 166.

Water Supply

The water supply in the Susan River service area is obtained from two major sources, snowmelt runoff and springs. Snowpack on the Willow Creek Valley and Piute Creek watersheds, which embrace more than one-half of the Susan River stream system, melts early in the spring and is usually depleted by May 1. Irrigation requirements from this portion of the stream system are then almost entirely dependent on the flow of springs that are relatively constant throughout the year.

Under average flow conditions, Lassen, Gold Run, Baxter, and Parker Creeks, and Susan River above Susanville are sustained by snowmelt runoff until early June. The flow from perennial springs in this portion of the system is comparatively small.

The Lassen Irrigation District stores supplemental water in Hog Flat and McCoy Flat Reservoirs, located on the

headwaters of the Susan River. This stored water is released into the Susan River Channel and commingled with the natural flow, usually during June and July. It is then rediverted into Lake Leavitt for further distribution by the irrigation district.

Records of daily mean discharge of the several stream gaging stations in the service area are presented in Tables 53 through 57, pages 156 through 158.

Method of Distribution

Irrigation in the Susan River service area is accomplished by placing dams in the main channels, thus raising the water level for subsequent diversion into canals and ditches. These diversion dams are relatively large on the Susan River Channel and much smaller on the tributaries. Wild flooding is the most common method of irrigation in practice. Portions of the irrigated lands have been leveled, permitting a more efficient use of water by using border checks and furrows. Subirrigation occurs in some areas incidental to surface irrigation or as a result of seepage from ditches and creek channels.

The Lassen Irrigation Company is entitled to divert or store up to the present capacity of its reservoirs from the natural flow of Susan River between March 1 and July 1 of each year when the flow of Susan River immediately above Willow Creek is more than 5 cubic feet per second in spite of the allotments granted to users in Schedules 3 and 6 and to users of third priority class in Schedule 5 of the Susan River decree. When the flow of Susan River immediately above Willow Creek is below the required amount, the watermaster then measures the inflow to McCoy Flat Reservoir, and if available, releases the amount required. A transportation loss of 15 percent, or a minimum of two cubic feet per second, is deducted from all water that is transferred from Lassen Irrigation Company upstream storage reservoirs to Lake Leavitt.

The several decrees (see Table 1) which apply to the Susan River service area establish the following number or priority classes for the major stream systems and distributions areas: Baxter Creek - five; Parker Creek - four; Gold Run Creek - three; Lassen Creek - two; Piute and Hills Creek - one; Willow Creek - two; and Susan River - three. Geographical features are such that the Susan River, Willow Creek and Lower Susan River areas are subject to interrelated priorities.

1971 Distribution

Watermaster service began in the Susan River service area on April 1 and continued until September 30 with Lester Lighthall, Water Resources Technician II, as watermaster.

The available natural water supply throughout the service area was about average. Because of the late runoff caused by the cool spring weather, the irrigation season was well above normal.

Parker Creek. The available water supply in Parker Creek was sufficient to satisfy all allotments (four priorities) until July 7. From July 7 to July 31 the flow decreased rapidly to first priority allotments, which were then served for the remainder of the season.

Baxter Creek. The available water supply was sufficient to satisfy third priority allotments (a total of five priorities) until July 15. The flow decreased from July 15 to August 10 when approximately 60 percent of second priority allotments were supplied. The flow at Diversion No. 75 never dropped to 1.0 cubic feet per second.

Lassen-Holtzclaw Creeks. The available water supply in Lassen-Holtzclaw Creeks was sufficient to meet all allotments (two priorities) until July 20. The flow decreased to first priority allotments on August 10. From August 10 throughout the remainder of the season the Tangeman Ranch was entitled to all of the water available in the stream.

Hills Creek. Available water supply in Hills Creek was sufficient to supply all allotments (one priority) until July 31, and all storage facilities on Hills Creek were filled by this date. First priority water declined until September 5 when only stockwater was available to the Amesbury Ranch.

Gold Run Creek. The available water supply in Gold Run Creek was sufficient to supply all allotments (three priorities) until July 10. Between July 10 and August 20, the flow decreased steadily. After August 20 the flow remained reasonably constant, supplying about 15 percent of second priority allotments.

Piute Creek. The available water supply in Piute Creek was sufficient to satisfy all allotments (one priority) and provide a small surplus flow to the Susan River throughout the season.

Willow Creek. The available water supply in Willow Creek was sufficient to supply all allotments (two priorities) throughout the season.

Susan River. The available water supply in the Susan River was sufficient to supply all allotments in Schedule 6 (three priorities) until July 31. As the flow receded, Schedule 6 was terminated for the season. All allotments in Schedule 3 (three priorities - Lower Susan River) were satisfied until late July. Throughout the remainder of the season there was enough water for about 50 percent of second priority allotments in this schedule.

All allotments in Schedule 5 (three priorities - Upper Susan River area) were satisfied until July 31. The flow receded until August 20 when there was enough water for about 20 percent of the second priority allotments. Throughout the remainder of the season the flow remained constant.

Lassen Irrigation Company Reservoirs. The Susan River decree allows the Lassen Irrigation Company's McCoy Flat and Lake Leavitt Reservoirs to store surplus water during the winter and spring months. Once filled, or if a shortage occurs among downstream water right owners, the natural flow in the Susan River above McCoy Flat Reservoir must be released.

During spring runoff the above reservoirs filled to capacity. Shortages began to occur in early July, so controlled releases began on July 12. The company requested that its releases from Hog Flat Reservoir begin so the water elevation in Lake Leavitt could be kept high enough to allow irrigation out of High Canal to continue. Releases continued until August 30 at which time Hog Flat Reservoir was emptied.

McCoy Flat Reservoir releases began on July 14 and continued until August 30 at which time there was sufficient water in Lake Leavitt for Lassen Irrigation Company to complete its irrigation season.

Special Occurrences

The Lassen Irrigation Company reservoirs being filled during the spring contributed significantly to a better than average irrigation season for the Susan River water users.

SUSAN RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 53

SUSAN RIVER AT SUSANVILLE

Day	March	April	May	June	July	August	September	Day
1	55	334	321	527	98	93	21	1
2	54	330	307	459	93	92	19	2
3	54	308	392	408	87	90	19	3
4	51	285	483	341	83	88	18	4
5	46	271	493	309	79	88	17	5
6	45	307	491	282	76	87	16	6
7	45	309	496	268	73	95	15	7
8	45	287	539	221	69	97	15	8
9	46	305	557	184	68	97	15	9
10	47	399	562	180	66	95	15	10
11	55	310	573	177	67	93	15	11
12	437	303	593	173	65	92	15	12
13	266	313	578	169	88	89	15	13
14	161	302	551	164	95	89	14	14
15	128	326	529	161	101	85	14	15
16	124	338	504	157	104	79	14	16
17	124	353	449	160	106	75	13	17
18	100	285	409	161	119	72	13	18
19	94	256	380	151	120	67	14	19
20	103	259	345	140	140	65	14	20
21	124	229	342	115	127	63	14	21
22	144	204	316	102	114	61	14	22
23	726	196	298	89	109	60	14	23
24	531	185	263	80	106	60	13	24
25	499	173	216	83	103	59	13	25
26	1460	181	243	243	101	69	16	26
27	589	192	282	192	99	69	18	27
28	452	217	432	135	96	55	16	28
29	398	256	486	117	96	51	17	29
30	385	288	581	104	92	47	23	30
31	353		530		91	35		31
Mean	250	277	436	202	94.5	76	15.6	Mean
Runoff in Acre-Feet	15350	16470	26820	12000	5810	4670	930	Runoff in Acre-Feet

TABLE 54

GOLD RUN CREEK NEAR SUSANVILLE

Day	March	April	May	June	July	August	September	Day
1		13*	32	66	16	5.4	2.5	1
2		13	32	50	16	5.2	2.5	2
3		13	38	50	15	5.0	2.5	3
4		13	40	50	14	4.8	2.5	4
5		13	50	50	13	4.6	2.5	5
6		15	47	50	12	4.4	2.5	6
7		16	50	57	11	4.2	2.5	7
8		16	74	71	10	4.0	2.5	8
9		19	74	71	9.9	3.8	2.4	9
10		24	76	74	9.8	3.6	2.3	10
11		16	79	71	9.6	3.6	2.3	11
12		15	90	74	9.4	3.4	2.3	12
13		15	88	74	9.3	3.2	2.2	13
14		16	85	71	9.2	3.2	2.2	14
15		22	85	71	9.1	3.0	2.2	15
16		23	85	71	9.0	2.8	2.2	16
17		24	78	71	9.0	2.8	2.2	17
18		19	69	64	9.0	2.7	2.2	18
19		16	74	60	9.0	2.7	2.2	19
20		16	74	57	9.0	2.6	2.2	20
21		15	64	47	8.9	2.5	2.2	21
22		13	57	44	8.5	2.5	2.2	22
23		13	66	40	8.1	2.6	2.2	23
24		13	69	34	7.9	2.5	2.2	24
25		12	74	32	7.7	2.5	2.2	25
26		11	71	57	7.7	4.0	2.5	26
27		11	74	40	7.5	3.8	2.8	27
28		15	76	32	7.2	2.8	2.7	28
29		19	69	26	6.2	2.7	2.5	29
30		24	69	23	5.8	2.6	2.4	30
31			74		5.8	2.5		31
Mean		16.1	67.2	54.9	9.7	3.4	2.4	Mean
Runoff in Acre-Feet		958	4130	3270	594	210	140	Runoff in Acre-Feet

* Beginning of Record

SUSAN RIVER WATERMASTER SERVICE AREA

1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 55

SUSAN RIVER AT JOHNSTONVILLE BRIDGE

Day	March	April	May	June	July	August	September	Day
1		**			44	43	4.8	1
2					42	42	4.4	2
3					41	42	4.2	3
4					39	41	4.0	4
5					37	38	3.8	5
6					34	37	3.5	6
7					35	35	3.1	7
8					21	33	3.0	8
9					19	29	2.9	9
10					18	26	2.8	10
11					19	24	2.7	11
12					**	22	2.7	12
13						19	2.7	13
14						18	2.6	14
15						17	2.6	15
16						16	2.5	16
17						15	2.4	17
18						14	2.4	18
19				**		13	2.4	19
20				92*		13	2.4	20
21				81	**	12	2.3	21
22				53	89	10	2.1	22
23				29	69	8.0	2.0	23
24				29	65	7.5	2.0	24
25				35	56	6.9	2.0	25
26				81	53	6.7	2.4	26
27				200E	51	6.9	2.5	27
28				120E	50	6.9	2.3	28
29				90	47	5.5	2.3	29
30				66	45	5.0	2.4	30
31					44	4.8		31
Mean						19.9	2.7	Mean
Runoff in Acre-Feet						1220	171	Runoff in Acre-Feet

* Beginning of record

** Mean daily flow from April 1 to June 19 and July 12 to July 21 was in excess of 100 cfs.

E Estimated

TABLE 56

WILLOW CREEK NEAR SUSANVILLE

Day	March	April	May	June	July	August	September	Day
1	35	82	47	216	22	31	14	1
2	42	84	47	208	23	30	14	2
3	42	77	47	163	24	30	14	3
4	44	70	51	140	24	30	14	4
5	43	65	51	125	25	28	14	5
6	43	62	49	109	24	28	14	6
7	42	60	49	95	24	27	13	7
8	41	59	50	86	23	27	13	8
9	40	58	49	75	23	27	13	9
10	40	65	47	60	24	27	14	10
11	40	60	47	50	27	28	14	11
12	74	57	35	44	34	25	15	12
13	154	41	27	39	38	25	15	13
14	167	36	24	33	42	24	15	14
15	127	35	23	30	42	25	14	15
16	116	35	24	29	41	26	14	16
17	96	42	24	28	39	26	14	17
18	76	47	24	27	39	26	14	18
19	70	47	15	25	39	26	14	19
20	65	46	16	24	39	25	15	20
21	62	50	18	24	35	26	28	21
22	65	48	19	22	40	27	32	22
23	103	49	20	21	39	27	32	23
24	89	58	22	19	38	27	32	24
25	84	61	24	17	37	27	32	25
26	309	60	24	20	36	28	33	26
27	300	57	26	23	36	20	33	27
28	176	54	37	24	35	16	34	28
29	128	51	68	22	33	15	34	29
30	106	49	124	22	33	14	35	30
31	90		167		33	14		31
Mean	93.8	55.5	41.8	60.7	32.6	25.2	20.2	Mean
Runoff in Acre-Feet	5770	3300	2570	3610	2010	1550	1200	Runoff in Acre-Feet

SUSAN RIVER WATERMASTER SERVICE AREA

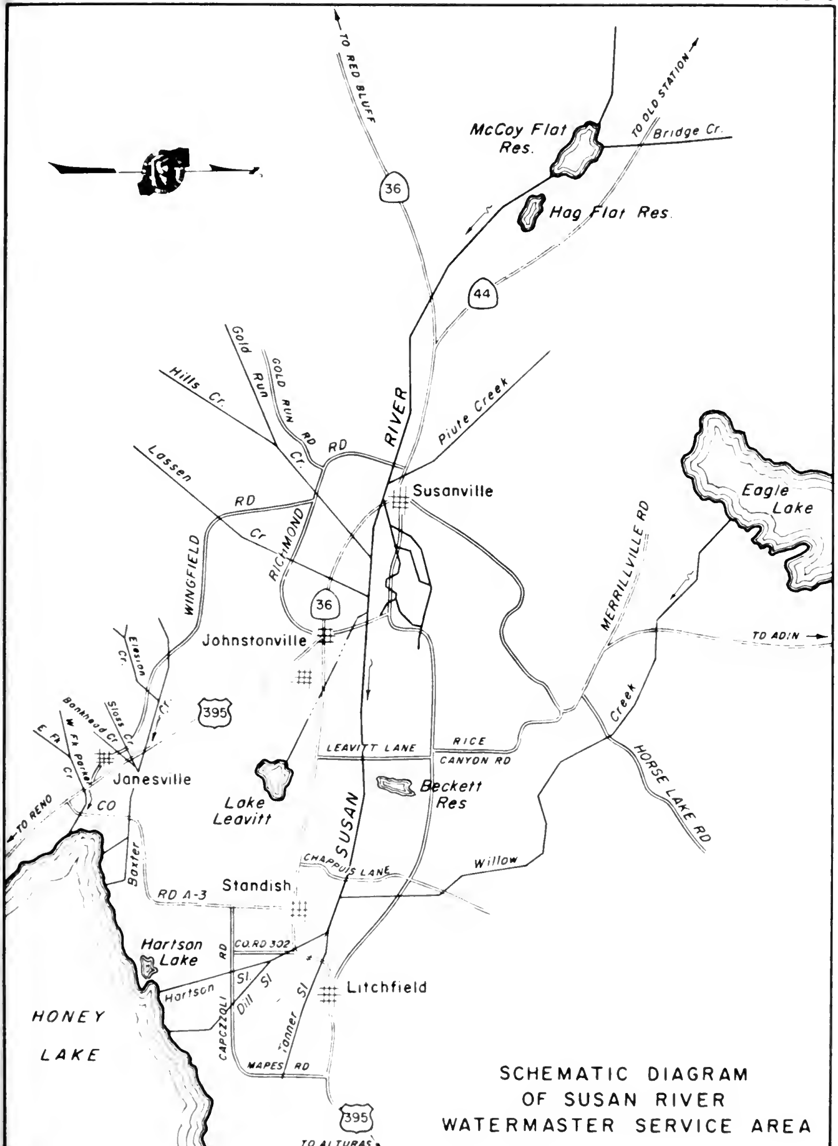
1971 Daily Mean Discharge in Cubic Feet Per Second

TABLE 57

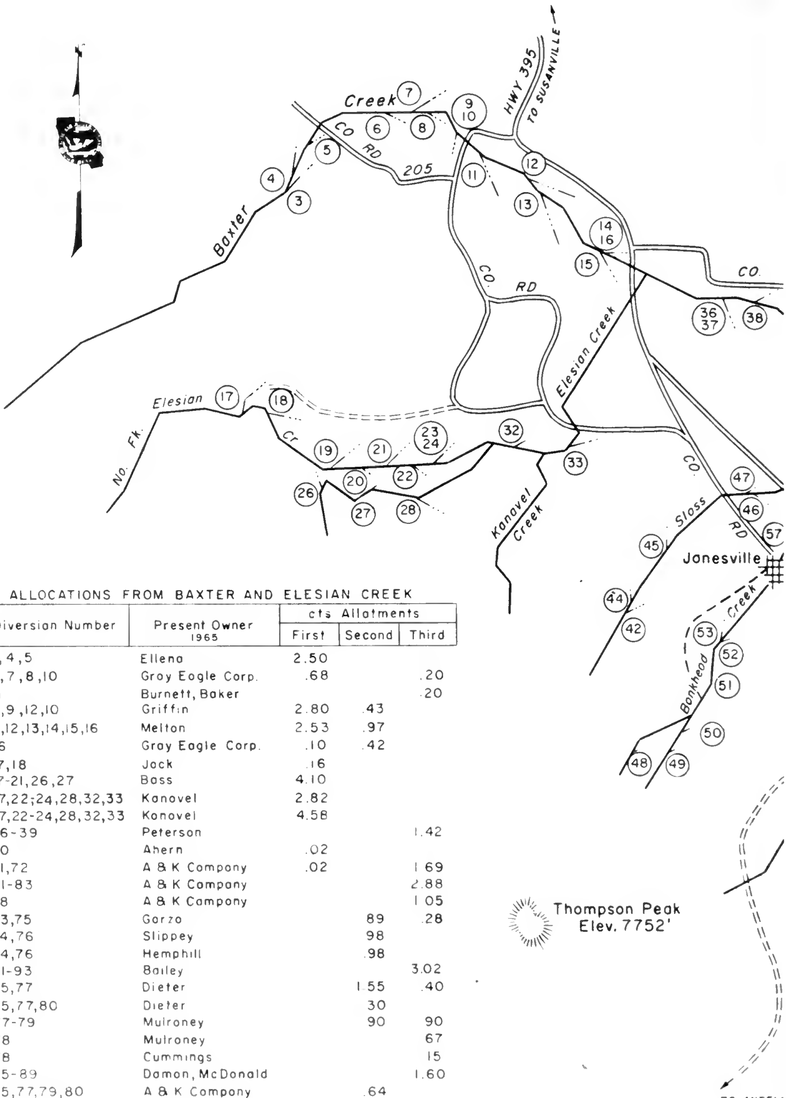
OPERATION OF McCOY AND HOG FLAT RESERVOIRS

Day	McCoy Flat Res. Inflow from Susan River		McCoy Flat Res. Releases to Susan River		Hog Flat Res. Releases to Susan River		Transfer of Lassen Irrig. Dist. Water from McCoy Flat and Hog Flat Res. to Lake Leavitt			Day
	June	July	July	August	July	August	July	August	September	
1		6.6	4.1[3]	43		50		54	16	1
2		5.1	5.3	43		50		56	9.8	2
3		4.8	7.0	43		50		54	8.8[2]	3
4		4.4	10	42		50	2.1[1]	49		4
5		3.9	11	41		50	5.3	47		5
6		3.4	12	42		54	6.1	53		6
7		2.8	15	43		54	7.4	56		7
8		2.5	17	45		53	10	55		8
9		1.9	19	47		52	12	55		9
10		1.1	23	46		50	14	56		10
11		0.7	24	48		47	18	63		11
12		0.2[5]	26	47	21[3]	44	22	69		12
13			28	48	50	42	35	70		13
14			36	46	50	40	54	62		14
15			42	44	50	38	52	57		15
16			44	42	49	36	60	56		16
17			47	43	49	34	63	56		17
18			45	41	51	32	59	63		18
19	37[1]		47	42	51	28	59	55		19
20	34		44	41	51	24	59	53		20
21	31		45	41	51	20	63	53		21
22	28		44	40	51	17	66	51		22
23	24		43	40	51	14	52	51		23
24	20		42	42	51	11	46	50		24
25	18		42	42	50	8.4	46	41		25
26	15		40	42	50	6.1	53	45		26
27	12		40	37	50	4.8	32	53		27
28	10		42	33	50	3.6	32	45		28
29	8.2		41	6.4	49	2.6	36	37		29
30	7.3		39	3.6	49	1.5	69	35		30
31			42	3.4[4]	49	1.0[5]	51	26		31
Mean	20.4	3.1	31.2	38.9	48.6	31.2	38.7	52.4	11.5	Mean
Runoff in Acre-Feet	485	74	1920	2390	193	1920	2150	3220	69	Runoff in Acre-Feet

1 Beginning of Record
2 End of Record
3 Beginning of Releases
4 End of Releases
5 End of Flow



SCHEMATIC DIAGRAM
OF SUSAN RIVER
WATERMASTER SERVICE AREA



ALLOCATIONS FROM BAXTER AND ELESIAN CREEK

Diversion Number	Present Owner 1965	cts Allotments		
		First	Second	Third
3,4,5	Ellena	2.50		
6,7,8,10	Gray Eagle Corp.	.68		.20
11	Burnett, Baker			.20
8,9,12,10	Griffin	2.80	.43	
8,12,13,14,15,16	Melton	2.53	.97	
16	Gray Eagle Corp.	.10	.42	
17,18	Jock	.16		
17-21,26,27	Bass	4.10		
17,22;24,28,32,33	Kanovel	2.82		
17,22-24,28,32,33	Kanovel	4.58		
36-39	Peterson			1.42
70	Ahern	.02		
71,72	A & K Company	.02		1.69
81-83	A & K Company			2.88
78	A & K Company			1.05
73,75	Garzo		89	.28
74,76	Slippey		98	
74,76	Hemphill		.98	
91-93	Bailey			3.02
75,77	Dieter		1.55	.40
75,77,80	Dieter		30	
77-79	Mulroney		90	90
78	Mulroney			67
78	Cummings			15
85-89	Damon, McDonald			1.60
75,77,79,80	A & K Company		.64	
81,83	Blankenship			.50
84,90	Triami Cattle Co.			1.81

ALLOCATIONS FROM SLOSS AND BANKHEAD CREEKS

Diversion Number	Present Owner 1965	cfs Allotments			
		First	Second	Third	Total
42	Bowersox	.02			0.02
44	Thornton	.002			0.002
45	Speors			.08	0.08
46	Grover	.10	1.10		1.20
46,47	Peterson	.10	1.10		1.20
48,49,50	Row	.02	.13		0.15
51	Holmes Pipeline	.08		.11	0.19
52,53,55	Pyle			.48	0.48
56,62	Ashmore	.25	3.23		3.48
63,65	Thomasson	.05		.30	0.35
66,67	Fritts	06		20	0.26

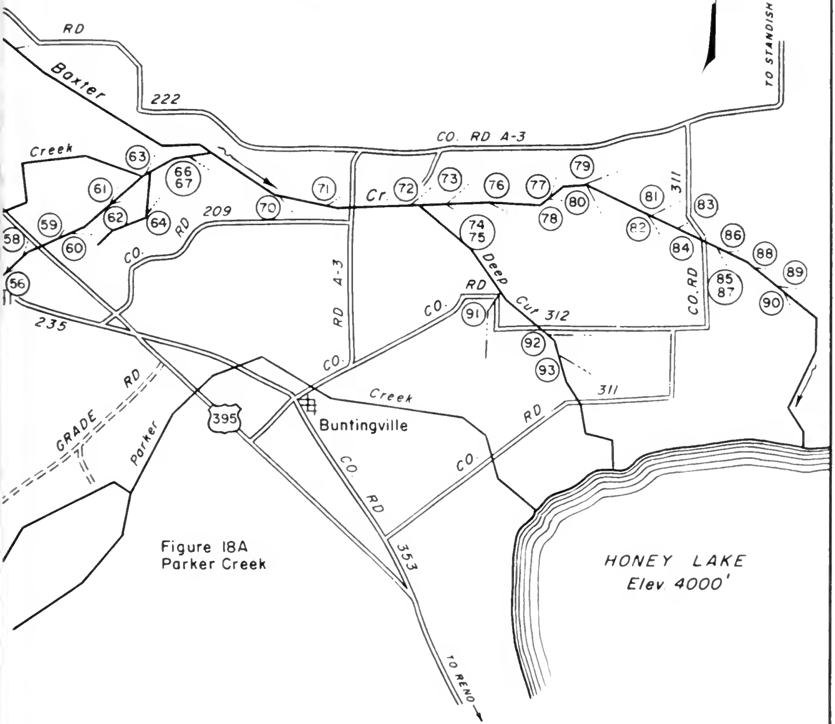
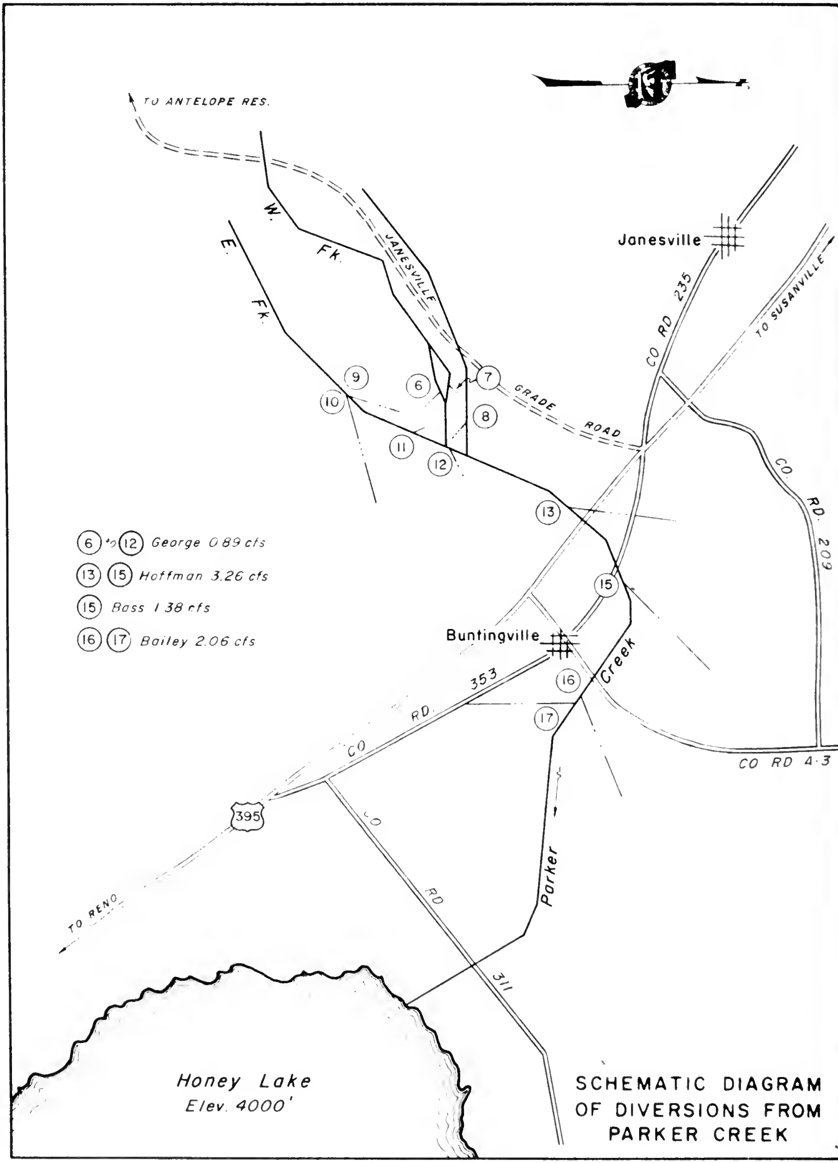


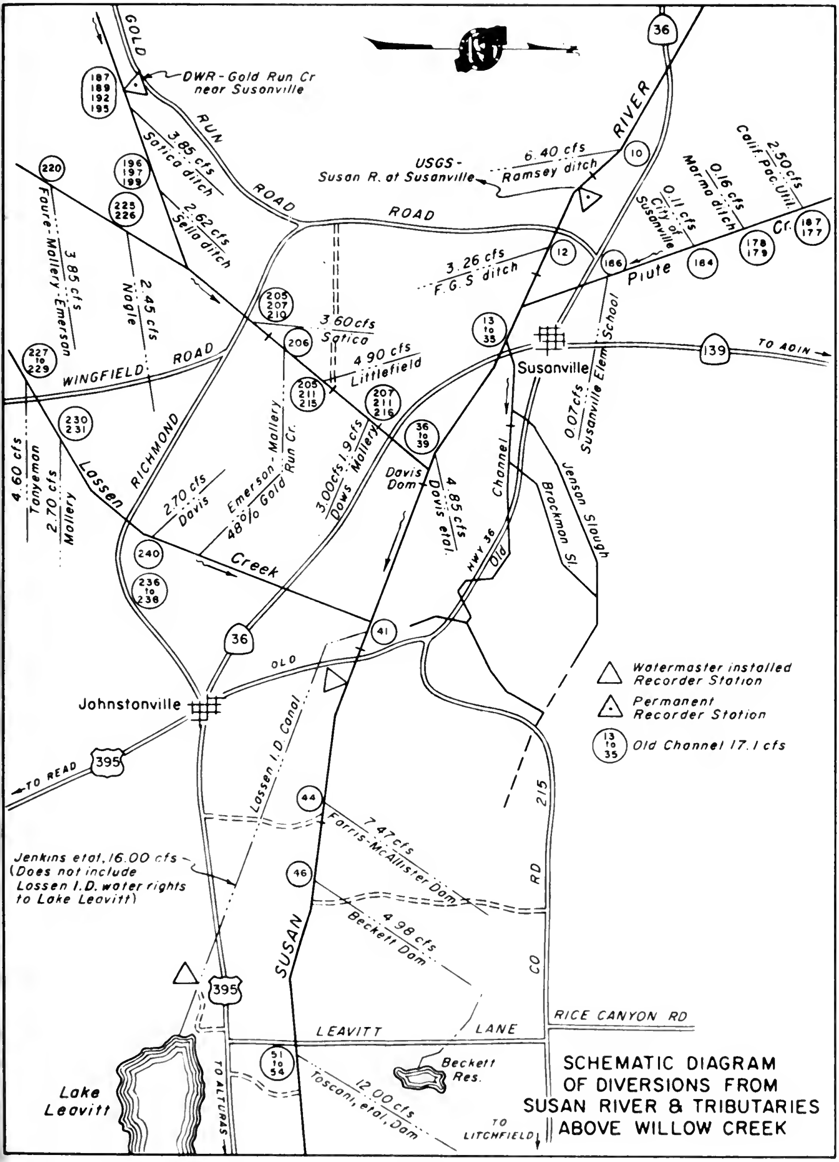
Figure 18A
Parker Creek

SCHEMATIC DIAGRAM OF DIVERSIONS FROM BAXTER CREEK

PE RESERVOIR



SCHEMATIC DIAGRAM OF DIVERSIONS FROM PARKER CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM SUSAN RIVER & TRIBUTARIES ABOVE WILLOW CREEK

3 = Schedule 3
5 = Schedule 5
6 = Schedule 6

(56), (94) to (96) Barry
Story
Fraley
Mendibaure
Wagner
2.00 cfs 3
1.95 cfs 6

(71), (75) to (78) McClelland
2.67 cfs 3
7.33 cfs 5
0.75 cfs 6

(57), (68), (69) Gibson
2.00 cfs 3
5.50 cfs 5

(58) to (61), (79), (80), (84) Mapes
2.91 cfs 3
8.03 cfs 5
2.35 cfs 6

(81) to (83) DeWitt
0.33 cfs 3
0.92 cfs 5
0.50 cfs 6

Theodore
0.50 cfs 3
[illegible] 38 cfs 5
2.60 cfs 6

(85), (86) Cal. Fish & Game
3.33 cfs 3
9.17 cfs 5
6.70 cfs 6

82, 87 [illegible], 9[illegible], [illegible] Capezzoli [illegible] DeWitt
2.00 cfs 3
5.50 cfs 5

(99) [illegible] Beckett
2.30 cfs 3
[illegible] cfs 5
[illegible] cfs 6

98 [illegible] Bailey
1.33 cfs 3
3.67 cfs 5

97 [illegible]
1.33 cfs 3
3.67 cfs 5

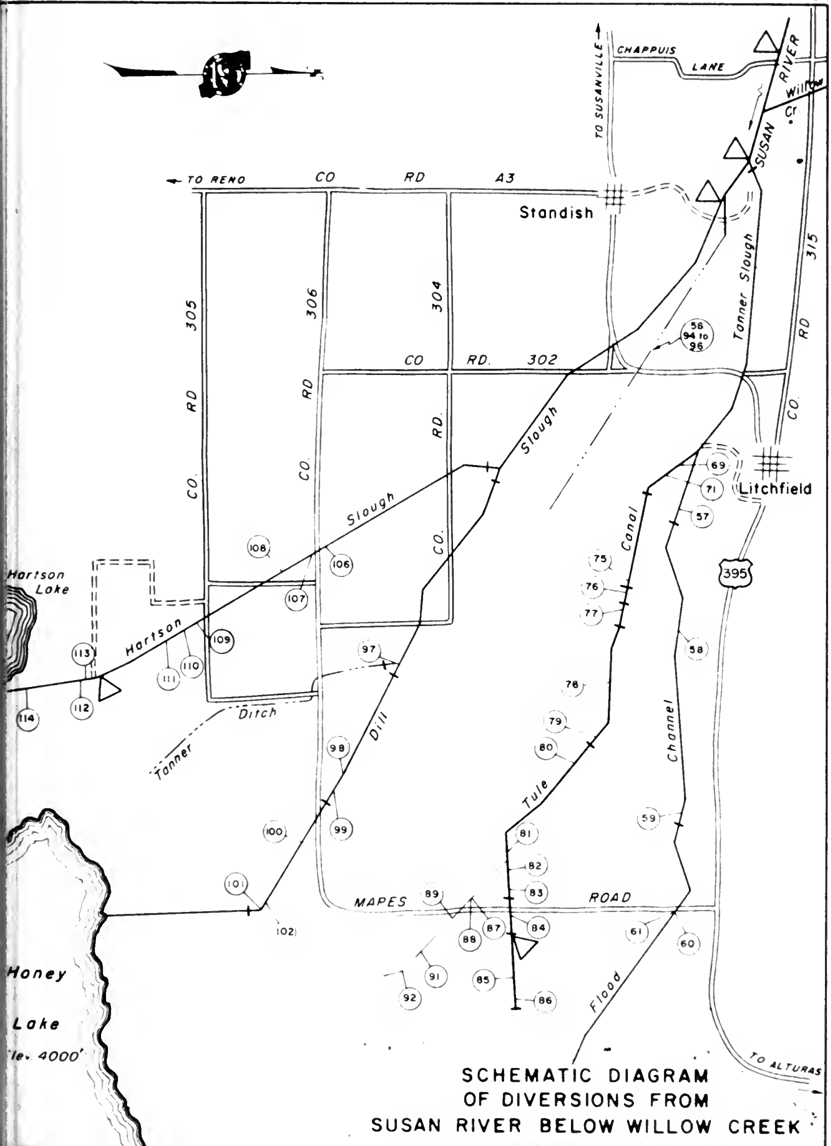
106 [illegible] Buckner
0.25 cfs 3
0.85 cfs 6

107, 108 Beckett
0.25 cfs 3
0.95 cfs 6

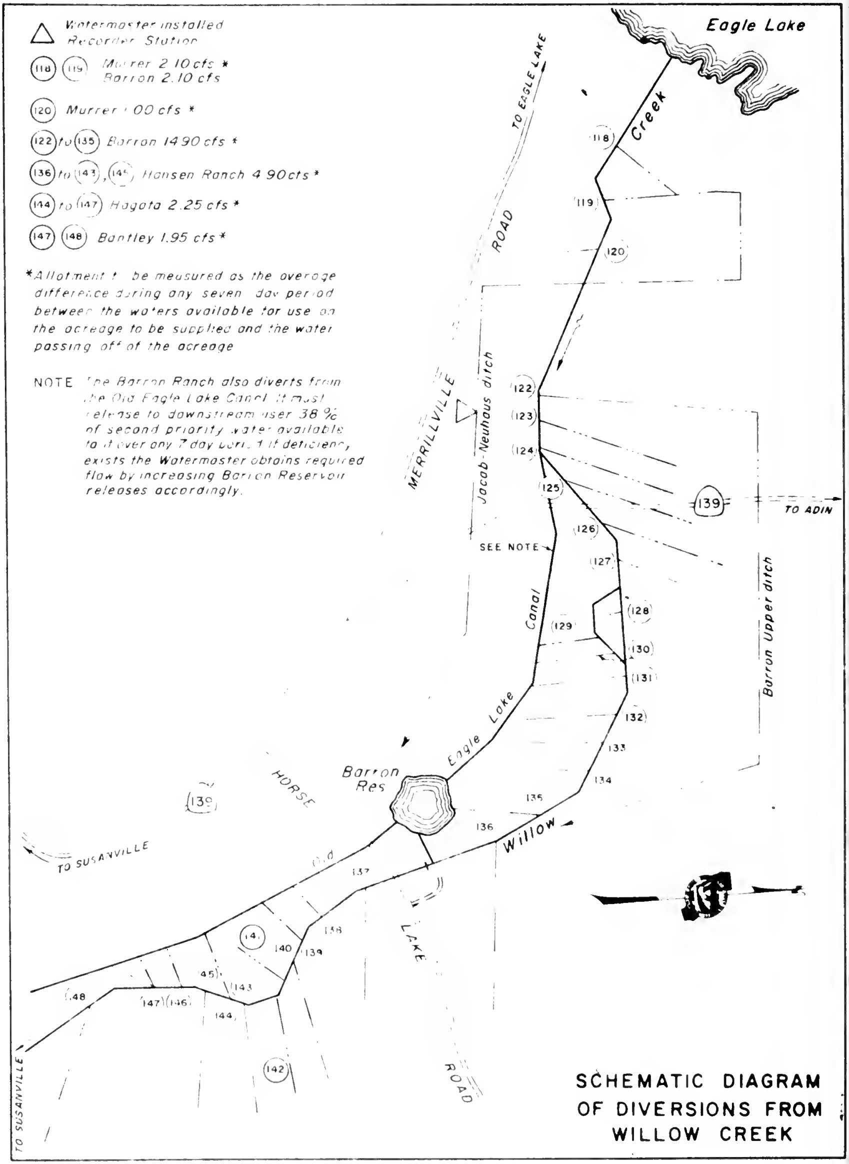
[illegible] Anderson
0.25 cfs 3
1.30 cfs 6

[illegible] Cal. Fish & Game 3.10 cfs 6

△ Watermaster installed Recorder Station



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
SUSAN RIVER BELOW WILLOW CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM WILLOW CREEK

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